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XII. — Coleoptera, Heteromera (*excluding* Tenebrionidæ)  
*from the Seychelles Islands and Aldabra* \*. By GEORGE  
CHARLES CHAMPION, F.Z.S.

[Plate VI.]

THE material reported upon in the present paper forms part of the collections made by the Percy Sladen Trust Expeditions of 1905 and 1908-9 in the Seychelles and other islands of the Western Indian Ocean \*. The twenty-six species of Heteromorous Coleoptera enumerated belong to eight families, the Monommidæ, Cistelidæ (= Alleculidæ), Melandryidæ, Edemeridæ, Anthicidæ, Pedilidæ, Xylophilidæ, and Mordellidæ. The Tenebrionidæ (at present in the hands of Herr Hans Gebien) are not included. The collections examined illustrate the abundance of certain Edemerids, Xylophilids, and Mordellids (*Mordellistena*) in the islands and the presence of two peculiar Melandryid genera in the Seychelles. A first set of the material, including the *types* of all new forms, will be placed in the British Museum.

\* Many results of this Expedition have been published in a special series of volumes of the Linnean Society's 'Transactions' (ser. 2, Zool. vols. xii.-xvii.).

## List of Species

## Fam. Monommidæ.

- 1.
- Monomma pruinosa*
- , sp. n.

## Fam. Cistelidæ (= ALLECULIDÆ).

- 2.
- Cacopsia viriditincta*
- , sp. n.
- 
3. "
- annulipes*
- , sp. n.

## Fam. Melandryidæ.

- 4.
- Stictodrya*
- (gen. nov.)
- longipennis*
- , sp. n.
- 
- 5.
- Mycterominus*
- (gen. nov.)
- insularis*
- , sp. n.

## Fam. Cedermeridæ.

- 6.
- Oxaxis grisescens*
- , Fairm.
- 
7. "
- lineola*
- , Fairm.
- 
- 8.
- Anasca alabrana*
- , sp. n.
- 
9. "
- scabripennis*
- , sp. n.
- 
10. "
- submarginata*
- , sp. n.

## Fam. Anthicidæ.

- 11.
- Anthicus oceanicus*
- , Lef.

## Fam. Pedilidæ.

- 12.
- Eurygenius fragilicornis*
- , sp. n.
- 
13. "
- convexicollis*
- , sp. n.

## Fam. Xylophilidæ.

- 14.
- Xylophilus torticornis*
- , sp. n.
- 
15. "
- clavicornis*
- , sp. n.
- 
16. "
- seychellarum*
- , sp. n.

## Fam. Mordellidæ.

17. \*
- Mordella braueri*
- , Kolbe.
- 
18. "
- peregrinator*
- , sp. n.
- 
19. "
- disparilis*
- , sp. n.
- 
- 20.
- Mordellistena mahena*
- , Kolbe.
- 
21. "
- degressa*
- , sp. n.
- 
22. "
- partilis*
- , sp. n.
- 
23. "
- colea*
- , sp. n.
- 
24. "
- septemcarinata*
- , sp. n.
- 
25. "
- deempta*
- , sp. n.
- 
26. "
- argutula*
- , sp. n.

## Fam. Monommidæ.

## MONOMMA.

*Monomma*, Castelnau, Hist. Nat. Ins. ii. p. 215 (1840).1. *Monomma pruinosa*, sp. n.

Elliptic, rather broad, feebly shining, nigro-piceous or black, at most obsoletely rufo-variegate; the reddish coloration sometimes becoming more distinct along the lateral and apical margins of the prothorax, towards the sides of the elytra before the apex, and on the humeri beneath, the antennal club, the palpi, and the legs in part also rufescent; somewhat thickly clothed above with minute, fulvous, adpressed, squamiform hairs, which are condensed into a small patch on each elytron at the base. Head densely punctate. Prothorax rounded at the sides anteriorly, closely, finely punctate, the anterior angles arcuately produced, the hind angles subrectangular. Elytra transversely gibbous

\* Not represented in the collections made by the Expedition.

before the middle, with rows of somewhat closely placed, rather coarse, shallow punctures placed in fine shallow striæ, the punctures becoming coarser and less approximate and the striæ obsolete on the gibbous portion of the disc, the interstices minutely punctate throughout, moderately convex towards the sides and apex, and almost flat on the disc. Beneath closely, finely punctate, the punctures on the anterior and lateral portions of the metasternum coarse and scattered; prosternal process moderately broad, the marginal carinae parallel; fifth ventral segment with a very deep, bisinuate, transverse sulcus extending across the middle from the outer margin, interrupted in the centre by a dentiform backward prolongation of the anterior portion of the segment.

Length  $5\frac{1}{2}$ – $6\frac{1}{2}$ , breadth  $3\frac{1}{2}$ – $3\frac{3}{4}$  mm.

Loc.: Aldabra: Takamaka, x.–xi. 1908 (Fryer).

Eleven specimens, almost certainly including the two sexes. Near *M. irroratum*, Klug, from Madagascar, but smaller; the vestiture finer and more scattered, not condensed into two well-defined densely punctate spots on the disc of the prothorax (well shown in Klug's figure); the prothorax more finely punctate; the elytra less dilated at the sides below the humeri, the humeri more acute, the seriate punctures smaller and shallower, the dentiform backward prolongation of the basal portion of the fifth ventral segment narrower and extending to very near the apex.

#### Fam. Cistelidæ (= Alleculidæ).

##### CACOPLESIA.

*Cacoplesia*, Fairmaire, Ann. Soc. Ent. Belg. xlii. p. 237 (1898).

The two species provisionally referred to this genus have the penultimate joint of the tarsi lobed and the tibial spurs small, as defined by Fairmaire.

#### 2. *Cacoplesia viriditincta*, sp. n. (Pl. VI. fig. 1, ♂.)

Oblong-oval, moderately elongate, subopaque, subglabrous, fusco-testaceous, more or less suffused with green or golden-green, the head and prothorax being almost entirely of this colour, the elytra more dilute, the antennæ and legs testaceous or obscure testaceous. Head closely, finely punctate, the epistoma separated from the front by a shallow groove; eyes large, prominent, slightly smaller in ♀, separated by less than the width of one of them as seen

from above; last joint of maxillary palpi rather narrow, elongate-triangular; antennæ slender, long in ♂, shorter in ♀, joints 3-11 subequal in length, 3-10 feebly subserrate. Prothorax transverse, rather small, arcuately narrowing from a little behind the middle to the apex, the base broadly subtruncate, the hind angles obtuse; the punctuation fine and sparser than on the head, the interspaces alutaceous. Elytra much wider than the prothorax, moderately elongate, subparallel in their basal half in ♂, a little widened posteriorly in ♀; deeply crenato-striate, the punctures closely placed, the interstices convex throughout and very sparsely, finely, irregularly punctate. Aedeagus of ♂ long, tapering, abruptly bent at some distance before the slender tip.

Length  $7\frac{1}{2}$ - $8\frac{1}{2}$ , breadth  $3$ - $3\frac{1}{2}$  mm. (♂ ♀.)

Loc. Aldabra: Esprit Island, xii. 1908 (Fryer).

Five specimens, the two males having the aedeagus protruding. Allied forms occur in Madagascar, and it is just possible that the present species may be referable to one of them. It has the upper surface obviously less shining than in *C. micans*, Klug, *cærulans* and *cæruleovirens*, Fairm., &c., to judge from the descriptions of those insects.

### 3. *Cacopselia annulipes*, sp. n. (Pl. VI. fig. 2, ♂.)

Oblong-ovate, convex, the head and prothorax opaque, the rest of the surface shining; head, prothorax, and coxæ, and the basal joint of the antennæ in immature examples, obscure ferruginous, the rest of the antennæ black, the elytra brown, the legs testaceous, with the knees, and sometimes the apices of the tibiæ also, black; very finely pubescent, the elytra almost glabrous. Head small, densely, rugosely punctate, the epistoma confused with the front; eyes small, strongly transverse, rather prominent, somewhat distant from the base of the head; last joint of maxillary palpi small, subtriangular; antennæ extending to beyond the middle of the elytra, joint 2 small, 3 and 5 equal, 4 slightly longer, 5-10 gradually becoming shorter and stouter, 11 ovate, shorter than 10. Prothorax transversely convex, short, nearly twice as wide as the head, rounded at the sides, a little more narrowed in front than behind, subtruncate at the base, the hind angles obtuse; densely, rugosely punctate. Elytra convex, moderately long, about one-half wider than the prothorax, narrowing from the middle, the humeri rounded; crenato-striate, the punctures closely placed, the interstices convex, faintly punctulate. Beneath closely,

finely punctate. Fifth ventral segment with a shallow transverse depression before the apex.

Length  $3\frac{1}{2}$ –4, breadth  $1\frac{1}{2}$ – $1\frac{2}{3}$  mm. (♂.)

Loc. Seychelles: Mahé.

Four specimens, apparently all males, from the damp endemic mountain-forests above Cascade Estate and in the Mare aux Cochons district (between 1000 and 2000 feet). This species has the legs coloured as in *Plesia geniculata*, Klug, from Madagascar. It will doubtless have to be removed from *Cacoplesia*, on account of the small head and eyes, the small apical joint of the antennæ, the convex general shape, &c. It can hardly be referred to *Allecula*, a genus at present including many heterogeneous forms. Allied insects inhabit Borneo.

#### Fam. Melandryidæ.

##### STICTODRYA, gen. nov.

Head short, small, obliquely narrowed immediately before the very large prominent eyes and parallel-sided behind them, the epistoma not separated from the front; labrum strongly transverse; mandibles small; maxillary palpi rather stout, the apical joint triangular; antennæ very short, slender, subserrate towards the tip; prothorax transverse, without trace of marginal carina, the base feebly bisinuate, with distinct foveæ; scutellum small; elytra elongate, much wider than the prothorax, subparallel, without trace of striæ, the punctuation uniform, the epipleura not reaching the apex; anterior coxæ contiguous, the cavities open behind; intermediate coxæ well separated; intercoxal process of abdomen narrow, triangular; ventral segments rather long, the sutures almost straight; tibial spurs minute; tarsi with penultimate joint and the one preceding it lobed beneath, the former broad, the claws feebly developed and appendiculate; body elongate, depressed, the integument rather soft, variegated with lighter and darker pubescence.

Type, *S. longipennis*.

This genus seems to be best placed near *Thisias* and various other forms provisionally referred by me to Melandryidæ.

The structure of the mandibles cannot be seen in the unique example obtained. The narrow, immarginate, basally foveate prothorax, elongate, subparallel, uniformly punctate,

fasciate elytra, smaller eyes, &c., separate *Stictodrya* from *Mycteromimus*. Fairmaire's Melandryid-genus *Diegoa*, from Madagascar, is compared with *Marolia*, and it cannot, therefore, be very nearly allied to the Seychelles insect.

4. *Stictodrya longipennis*, sp. n. (Pl. VI. fig. 3, ♂.)

♂. Moderately shining, piceous, with a faint æneous lustre, the antennæ and legs testaceous; variegated above with very fine, adpressed brownish and flavo-cinereous pubescence, the latter condensed into dense patches on the prothorax and elytra, forming irregular interrupted fasciæ on the latter; the head, prothorax, and scutellum densely, finely punctate, the puncturing of the elytra a little more diffuse. Head convex, transversely depressed in front, the post-ocular portion about one-third the length of the eye; antennæ reaching the base of the prothorax, very slender, joints 3-10 gradually decreasing in length, 2 short, stout, 3 about twice as long as 2, 9 and 10 triangular, 11 short-ovate. Prothorax transverse, a little wider than the head with the eyes, the sides rounded anteriorly and parallel behind, the disc obliquely depressed on each side, the small basal foveæ polished. Elytra about four times the length of the prothorax, the humeri somewhat oblique in front. Ventral segments 1-5 closely, finely punctate, simple.

Length  $5\frac{1}{4}$ , breadth 2 mm.

Loc. Seychelles: Mahé.

One specimen, beaten from dense forest-vegetation of "Capucin"-trees (*Northea*), *Roscheria*-palms, &c., on the summit of Morne Pilot, over 2000 feet, xi. 1908.

MYCTEROMIMUS, gen. nov.

Head short, obliquely narrowed before the eyes, the epistoma not separated from the front; eyes very large, reaching the anterior margin of the prothorax; labrum strongly transverse; antennæ short, slender, the outer joints suberrate, 11 short-ovate, simple; mentum strongly transverse; apical joint of maxillary palpi stout, elongate-triangular; mandibles acute at tip, toothed towards the apex beneath; prothorax short, closely applied to the elytra, bisinuate at the base, distinctly margined to near the apex at the sides beneath; scutellum small; elytra much wider than the prothorax, oblong, without trace of striæ, the sculpture consisting of intermixed minute and larger punctures, the epipleura not reaching the apex; anterior coxæ

small, contiguous, the cavities open behind and closed by the mesosternum; intermediate coxæ narrowly separated; intercoxal process of the abdomen rather narrow, triangular; ventral segment 5 simple in both sexes, 2 with a pubescent tubercle in ♂; tibial spurs minute; tarsi sparsely pubescent on their lower surface, penultimate joint broad and lobed beneath, the claws appendiculate; body oblong-oval, densely pubescent.

Type, *M. insularis*.

The single species from which the above characters are taken is nearly related to the holarctic genus *Mycterus*, some of the members of which have a non-rostrate head; but it differs from these latter in the still shorter head, the greatly developed eyes, the elongate-triangular apical joint of the maxillary palpi, the small scutellum, &c. An unnamed insect from Madagascar (represented by two broken examples in the British Museum) is still more closely allied to the Seychelles insect.

5. *Mycteromimus insularis*, sp. n. (Pl. VI. fig. 4, ♀.)

Moderately convex, shining, teneo-piceous, the legs, mouth-parts, and antennæ (except the intermediate joints in mature examples) testaceous; densely clothed with pale brownish or brownish cinereous pubescence (which almost hides the sculpture), that on the prothorax transversely arranged; the entire surface densely, minutely punctate, with scattered, irregularly placed, slightly coarser punctures intermixed, these latter giving an asperate appearance to the elytra when the vestiture is removed. Antennæ with joint 3 about twice as long as 2, 3-10 gradually becoming shorter and subserrate, 9 and 10 subtriangular, 11 short-ovate. Prothorax strongly transverse, the sides rounded anteriorly and parallel at the base. Elytra about four times the length of the prothorax, the humeri rounded.

♂. Ventral segment 2 somewhat gibbous in the middle anteriorly and at this place bearing a small, fulvo-pubescent tubercle.

Length 4-6½, breadth 2-2½ mm. (♂ ♀.)

Loc. Seychelles: Silhouette, Mahé.

Twelve specimens, only obtained by beating from the growing leaves of one species of endemic palm (*Stevensonia sechellarum*) in the mountain-forests: Silhouette, above Mare aux Cochons, over 1000 feet, ix. 1908; Mahé, near Morne Blanc, and above Cascade Estate, in both cases at about 1000 feet. The insect is probably pulverulent in life



like its Palearctic allies. The European *Mycterus curculionoides* F., has a similar tuft of hairs on the second ventral segment in the male.

#### Fam. Edemeridæ.

One species of this family is quoted by Kolbe as having been recorded from the Seychelles by Fairmaire in 1893, but no name was given: the insect in question is doubtless one of those subsequently described by the French author\*.

#### OXACIS.

*Oxaxis*, Leconte, New Species Coleopt. p. 165 (1866); Leconte & Horn, Class. Coleopt. N. Am. p. 405 (1883); Champion, Biol. Centr.-Am., Coleopt. iv. 2, p. 149, and Trans. Ent. Soc. Lond. 1896, p. 39.

The insects placed under this genus have the mandibles uneleft at the apex, the right one, at most, with a short tooth before the tip. Amongst the ten species of *Ananea* recorded by Fairmaire from Madagascar or the Seychelles two, at least, *A. griseus* and *A. lineola*, belong to *Oxaxis* as here understood, and *Lagria livida*, F. (selected by Semenow as the type of *Sessinia*, Pasc.), from Tahiti, is congeneric with it. Fairmaire notes the extreme rarity of the males of some of these Edemerids.

#### 6. *Oxaxis griseus*. (Text-fig. 1, ♂ genital armature.)

*Ananea griseus*, Fairm. Ann. Soc. Ent. Belg. xli. p. 119 (1897).

\* Elongate, robust, pale testaceous, the eyes and the tips of the mandibles black, subopaque, the anterior portion of the head shining, thickly clothed with very fine pallid pubescence. Head above and between the eyes densely, finely punctate, the punctuation becoming coarser and diffuse on the anterior half, the epistoma rather long; eyes very large; left mandible simple, right mandible toothed before the tip; antennæ nearly as long as the body in ♂, a little shorter in ♀, joint 3 distinctly longer than 4, 11 shorter than 10 and feebly constricted at the middle. Prothorax oblong-subcordate, densely, finely punctate, obsolete, interruptedly canaliculate down the middle, the shallow groove terminating in a deeper, transverse, foveiform depression before the base, the disc transversely flattened or depressed towards the apex,

\* Fairmaire also mentions (Bull. Soc. Ent. Fr. 1893, p. xcix) a Cantharid and a Rhipiphorid from the Seychelles, but no names are given.

without definite foveæ. Elytra elongate, subparallel in their basal half, closely, extremely finely punctate, obsoletely bicostate on the disc from the base to beyond the middle.

♂. Sixth (hidden) ventral segment divided into two long, inwardly curved, sinuous, concave, forcipiform lobes, the small seventh segment very deeply emarginate, a long, slender, pilose rod extruding from the emargination; ædæagus extremely elongate, slender, thickened at the tip, lateral lobes long, ciliate, arising from a common stem, which is abruptly bifurcate from a little beyond the middle. (Text-fig. 1.)

Fig. 1.



*Oxacis (Ananca) grisescens*, Fairmaire, ♂. Gen. armature.

Length 10–12 mm. (♂ ♀.)

*Loc.* Seychelles: Mahé, Silhouette, Praslin, Félicité, Bird Island (1905 and 1908–9); Round Island (Mus. Brit.). The specimens were all found at or near the coast, never in the endemic forests of the mountains.

Fifteen examples seen, including a ♂ from Round Island, received by the British Museum in 1870. The very fine close puncturing of the upper surface, the long third antennal joint, the form of the mandibles, and the generally robust body, distinguish *O. grisescens* from the allied insects occurring in the Seychelles, whence Fairmaire's type was obtained. It is the only one to which his brief description applies.

#### 7. *Oxacis lineola*.

*Ananca lineola*, Fairm. Ann. Soc. Ent. Belg. xxxix. p. 453 (1895).

Elongate, shining, finely pubescent; pale testaceous, the

eyes and the tips of the mandibles black, the prothorax with a narrow median vitta and an oblong spot on each side (the vitta sometimes interrupted and the spot wanting), and the head in some specimens with a spot between the eyes, fuscous, the elytra fuscous, with the suture, three narrow lines on the disc (the outer one fainter and abbreviated anteriorly), and the lateral margin more broadly, pale testaceous, the ventral surface and metasternum in part infusate. Head moderately produced anteriorly, very finely punctate; eyes large, separated by more than the width of one of them as seen from above; mandibles uncleft at the tip; antennae long, joint 3 longer than 4, 4-10 decreasing in length, 11 longer than 10 and feebly constricted at the middle. Prothorax longer than broad, moderately constricted behind the middle, transversely depressed anteriorly and also hollowed in the centre before the base; the surface polished, very finely punctate, with an indication of a smooth median line. Elytra much wider than the prothorax, somewhat attenuate posteriorly, closely, very finely punctate, without definite costæ.

♂. Fifth ventral segment excavate down the middle before the apex.

Length 7-10½ mm. (♂ ♀.)

Loc. Aldabra (1908, *Fryer*). Madagascar (Mus. Brit.).

Four specimens, one only of which (a ♀) is from Aldabra, apparently referable to *A. lineola*, Fairm., the type of which was from Madagascar.

#### ANANCA.

*Sessinia*, Pascoe, Journ. Ent. ii, pp. 45, 488 (1863) (nomen nudum).

*Ananea*, Fairmaire et Germain, Ann. Soc. Ent. Fr. 1863, p. 267.

*Copidita*, Leconte, New Species Coleopt. p. 164 (1866); Champion, Biol. Centr.-Am., Coleopt. iv, 2, p. 144, and Trans. Ent. Soc. Lond. 1896, p. 40.

This genus differs from *Oxaxis* in having both mandibles cleft at the tip. No type was given by Pascoe for *Sessinia* and his name cannot be accepted. The five species referred to *Ananca* by Fairmaire and Germain were all from Chile; the first of these, *Nacertes pallens*, Sol., which must be taken as the type, proves to have bifid mandibles, and the name *Ananca*, therefore, must be adopted in place of *Copidita*, used by me elsewhere.

#### 8. *Ananca aldabrana*, sp. n.

Elongate, luteo- or fulvo-testaceous, the eyes and the tips

of the mandibles black, subopaque, the head shining, thickly clothed with rather coarse pallid pubescence. Head moderately produced in front, the epistoma rather long, coarsely, closely punctate; eyes large; mandibles each bifid at the tip: antennæ not reaching the apex of the elytra, joints 3 and 4 subequal in length, 11 feebly constricted at the middle. Prothorax considerably longer than broad, subcordate, narrow, densely, coarsely, subconfluently punctate, broadly depressed and subfoveate on each side of the disc anteriorly. Elytra long, nearly twice as wide as the prothorax, somewhat convex, closely, finely, scabroso-punctate, each with two distinct costæ on the disc and another near the outer margin, all three extending from the base to near the apex.

♂. Sixth (hidden) ventral segment divided into two narrow, curved, concave, forcipiform lobes, the corresponding dorsal segment similarly shaped; ædeagus long, rather stout, gradually widened towards the tip, the latter rounded, lateral lobes very long, slender, and feebly curved.

Length 8-12 mm. (♂ ♀.)

Loc. Aldabra (1908-9, *Fryer*). Seychelles: Round Island (Mns. Brit.).

Found in abundance at Aldabra, in several parts of the atoll. In the British Museum there are also two females and a male of the same species from Round Island. Very few males are contained in the long series before me; three, however (including the one from Round I.) have been identified, and their genital armature examined. The bifid mandibles, the densely, rather coarsely punctured, dull, subbifoveate, narrow prothorax, and the finely punctate, more distinctly costate elytra, readily separate *A. aldabrana* from *Oracis* (*Ananca*) *griseus*, Fairm. *A. (Sessinia) andrewsi*, Arrow, from Christmas Island, under which two species were confused by the author, has the terminal joint of the antennæ almost divided into two, the head much smoother, the prothorax non-foveate, and the elytra sharply bicostate on the disc, with the rest of their surface very finely, closely punctate.

#### 9. *Ananca scabripennis*, sp. n.

(Text-fig. 2, ♂ genital armature.)

*Sessinia andrewsi*, Arrow, Monogr. Christmas Isl. p. 107 (1900)  
(♀, nec ♂).

Elongate, testaceous or obscure testaceous, the eyes and the tips of the mandibles black, subopaque, the head and prothorax shining, finely pubescent. Head moderately

produced in front, sparsely, rather coarsely punctate, the punctures becoming more crowded towards the base; eyes large, separated by about the width of one of them as seen from above; mandibles each bifid at the tip; antennæ nearly as long as the body in ♂, shorter in ♀, joints 3-10 decreasing very slightly in length, 11 slightly longer than 10 and feebly constricted at the middle. Prothorax longer than broad, narrow, subcordate, rather sparsely, moderately coarsely punctate, the disc excavate on each side of the middle anteriorly and also in the centre before the base, appearing trifoveate. Elytra long, closely and rather coarsely scabropunctate, each with two faint costæ on the disc and another near the outer margin.

♂. Sixth (hidden) ventral segment divided into two, curved, concave, comparatively short lobes; aedeagus moderately long, gradually narrowed at the apex, the long narrow tegmen divided into two slender, acuminate processes (lateral lobes) from about the middle. (Text-fig. 2.)

Fig. 2.

*Ananca scabripennis*, Champion, ♂. Gen. armature.

Length 8-10 mm. (♂ ♀.)

*Loc.* Seychelles: Mahé, Silhouette, Praslin (1905, 1908-9). Christmas Island (Mus. Brit.). The examples from the Seychelles were all taken near the coast, not in the endemic mountain-forests.

Twelve specimens, apparently all females but one. Various female examples from Christmas Island placed by Arrow under his *Sessinia andreusi* doubtless belong to this species. They differ from his type (♀, not ♂ as stated) in having the

elytra roughly sculptured and obsoletely costate, the prothorax subtrifoveate, the apical joint of the antennæ feebly constricted, &c.

10. *Ananca submarginata*, sp. n.

♂. Moderately elongate, narrow, depressed, shining, finely pubescent; pale testaceous, the tips of the mandibles, the eyes, an oblong spot on each side of the prothorax, and an evanescent submarginal stripe on each elytron (extending from the humeral callus to beyond the middle), black or piceous; the entire upper surface closely, very finely punctate. Head slightly produced anteriorly; mandibles each bifid at the tip; eyes large, separated by considerably more than the width of one of them as seen from above; antennæ slender, extending to a little beyond the middle of the elytra, joints 3-5 subequal, 6-11 distinctly shorter, 11 feebly constricted. Prothorax longer than broad, subcordate, slightly hollowed on each side of the disc anteriorly and also in the middle towards the base. Elytra comparatively broad, moderately elongate, subparallel, faintly bicostate on the disc for about three-fourths of their length, the punctuation a little finer and more diffuse than that on the prothorax.

Ædeagus (as seen completely everted) long, bisagittate at the apex, the outer portion of the sheath also sagittate and divided at the tip into two slender acute processes; lateral lobes widely separated from the base, extremely elongate, slender, and ciliate.

Length 7 mm.

*Loc.* Aldabra: Takamaka, xi. 1908 (*Fryer*).

One male. A rather slender form, with a spot on each side of the prothorax and a submarginal streak on each elytron infuscate, the eyes widely separated, the upper surface shining and finely punctate, the mandibles bifid at the tip.

Fam. Anthicidæ.

ANTHICES.

*Anthicus*, Paykull, Fauna Suecica, i. p. 253 (1798).

A cosmopolitan genus represented in all parts of the world.

11. *Anthicus oceanicus*.

*Anthicus oceanicus*, Laferté, Monogr. Anthic. p. 170; Fairm., Rev. et Mag. Zool. 1849, p. 452; Pic, Ann. Soc. Ent. France, 1884, p. 608; Alluand, Hist. Madag., Coleopt. p. 487; Kolbe, Mitteil. Zool. Mus. Berlin, v. p. 27.

*Loc.* Seychelles: Bird Island, vii. 1908 (Freyer). Marquesas; Tahiti; Polynesia.

Three specimens are before me from Bird Island; this is one of two small coral-islands situated on the north of the Seychelles Bank, but which have neither the peculiar flora nor any of the physical features characteristic of the other islands of the group. Recorded by Pic as having been found in numbers by M. Ch. Alluand in the Seychelles in April, 1892, beneath seaweed on the coast.

## Fam. Pedilidæ.

*Eurygenius*, Laferté, Monogr. Anthic. p. 1 (1846).

The known species of this genus are mostly from North or Central America; two from Madagascar, however, have been described by Fairmaire, one from Japan by Lewis, one from E. Africa and another from Bengal by Pic, one from the Nilgiri Hills by myself, and one from E. Africa by Kolbe.

12. *Eurygenius fragilicornis*, sp. n. (Pl. VI. fig. 5, ♀.)

Elongate, narrow, somewhat shining, æneo-piceous or piceous, the anterior portion of the head rufous, the basal joint of the antennæ, the mouth-parts (the tips of the mandibles excepted), the humeri, femora, and the tibiæ in part or entirely, testaceous; somewhat thickly clothed, the legs and antennæ included, with rather long, semierect, pallid pubescence. Head densely, rugulosely punctate, obliquely narrowed behind the eyes, the latter extremely large, rounded, very feebly emarginate in front, coarsely faceted; mandibles entire; maxillary palpi with terminal joint stout, securiform, the two preceding joints angulate within; antennæ about half the length of the body, a little shorter in ♀, very slender, joints 3-10 elongate-obconic, subequal in length, 2 shorter than 3, 11 slightly longer than 10 and constricted beyond the middle. Prothorax narrower than the head (with the eyes), transversely orbicular, the narrow neck-like anterior portion rather long, the entire surface densely, rugulosely punctate. Elytra elongate, much wider

than the prothorax, parallel in ♀, broader at base and somewhat attenuate in ♂; closely set with subseriately arranged, coarse, oblong, foveiform punctures, the narrow interspaces minutely punctate and here and there transversely confluent.

♂. Femora stouter than in ♀, the hind tibiae more curved; fifth ventral segment unimpressed, simply truncate at tip.

Length 6, breadth  $1\frac{1}{2}$  mm. (♂ ♀.)

Loc. Seychelles: Mahé.

One pair, taken (4. ii. 1909) on the precipitous slopes of the peak of Morne Seychellois at an elevation of about 2000 feet; the specimens were obtained by sweeping a dense low growth of native ferns and shrubs (*Melastoma*, *Rubus*, *Scutellaria sechellensis*, &c.), among which were occasional *Roscheria*-palms and other small trees. The coarsely and closely foveato-punctate elytra separates the present species from the Madagascar forms. The single representative from the adjacent island of Silhouette cannot be treated as a variety of it.

### 13. *Eurygenius convexicollis*, sp. n.

♂. Elongate, rather narrow, opaque, the elytra and under surface somewhat shining; nigro-piceous, the epistoma and scutellar region rufescent, the two basal joints of the antennae, the mouth-parts (the tips of the mandibles excepted), femora, and tarsi in part, testaceous; somewhat thickly clothed, the antennae and legs included, with rather long, pallid, coarse, semierect pubescence. Head, palpi, and eyes as in *E. fragilicornis*, the antennae a little shorter and stouter, about as long as in ♀ of that species. Prothorax distinctly broader than the head (with the eyes), much narrowed behind. Elytra broader than in *E. fragilicornis*, narrowing from the base, the narrow interspaces between the subseriately arranged foveiform punctures more rugose, giving a dull appearance to the surface. Legs stout, the posterior tibiae feebly curved. Fifth ventral segment broadly hollowed down the middle, truncate at the apex.

Length 6, breadth  $1\frac{3}{4}$  mm.

Loc. Seychelles: Silhouette, viii. 1908.

One male example.

### Fam. Xylophilidæ.

#### XYLOPHILUS.

*Xylophilus*, Latreille, Fam. Nat. Règne Anim. p. 383 (1825).

A genus almost cosmopolitan in its distribution. Three



species are represented in the Seychelles collection, all of them apparently being fairly common insects in the Islands. Mr. Scott notes that "many of them were swept from grass and other low-growing vegetation." So far as known, they are wood-feeders in their earlier stages. Owing to their extreme fragility, very few of the specimens obtained are in good condition. Upwards of a dozen species have been described from Madagascar, three from Mauritius, one from Bourbon, &c.

14. *Xylophilus torticornis*, sp. n.  
(Pl. VI. figs. 6 ♂, 7 ♂ antenna.)

Rather short, moderately shining, very finely cinereopubescent, black, the tips of the tarsi, and sometimes that of the eleventh antennal joint also, reddish. Head short, together with the eyes broader than the prothorax, finely punctate; eyes moderately large, occupying nearly the whole of the sides of the head, feebly emarginate, distant; antennæ (fig. 9) moderately long, closely setose, somewhat twisted, stout, joints 2 and 3 short, 4-10 broad, perfoliate, very strongly transverse, 6-8 wider than the rest, 11 stout, ovate, about as long as 9 and 10 united. Prothorax transverse, convex, rounded at the sides, closely, rather finely punctate, bi-impressed on the disc posteriorly. Elytra much wider than the prothorax, subparallel in their basal half, closely, rather coarsely punctate, obliquely depressed on the disc below the base. Legs short; posterior femora moderately thickened, obsolete sulcate beneath; basal joint of posterior tarsi slightly curved.

Var. *a*. Duller, the punctuation denser and coarser.

Var. *β*. Shining, the punctuation more scattered than in the type.

Length 1-1½ mm. (♂ ♀.)

*Loc.* Seychelles: Silhouette [type]; Mahé [var. *a*]; Praslin [var. *β*].

Eighteen specimens—twelve of the form from Silhouette selected as type, two of the var. *a* from Mahé, and four of the var. *β* from Praslin, three of these much smaller than the rest. The examples from Silhouette were found in the forest near the Mare aux Cochons plateau, ix. 1908; the two from Mahé are from high elevations in the forests of Morne Blanc and the Mare aux Cochons district; those from Praslin were collected on Côtés d'Or Estate, xi. 1908. The females appear to have the antennæ a little less widened and the eyes rather smaller than in the males. A species

recognizable by the somewhat twisted antennæ, due to the joints 6-8 being more dilated than those preceding or following.

15. *Xylophilus clavicornis*, sp. n.  
(Pl. VI. fig. 9, ♀.)

Rather short, feebly shining, piceous or nigro-piceous, the tarsi, the bases of the tibiae, and the antennal joints 2-9 and the tip of 11 testaceous; the prothorax and elytra in fresh specimens variegated with sharply defined, irregular patches of very fine grey pubescence (tending to form an interrupted median and subapical fascia on the elytra), the rest of the vestiture brown. Head short, together with the eyes broader than the prothorax, densely, finely punctate; eyes large, occupying nearly the whole of the sides of the head, distant, almost entire; antennæ rather short, sparsely setose, joints 2-8 each longer than broad, 2 nearly as stout as 1, 3 more slender, 4-8 scarcely stouter, 9-11 wider than those preceding, 9 transversely subtriangular, 10 broader, strongly transverse, 11 stout, acuminate-ovate, about as long as 9 and 10 united. Prothorax transverse, convex, somewhat rounded at the sides, densely punctate, and with an interrupted arcuate depression on the disc before the base. Elytra much wider than the prothorax, slightly rounded at the sides, densely, rather coarsely punctate, feebly depressed on the disc below the base. Legs short; posterior femora moderately thickened, obsoletely sulcate beneath; basal joint of posterior tarsi feebly curved.

Length 1-1½ mm. (♂ ♀.)

*Loc.* Seychelles: Silhouette, Mahé, Praslin.

Found in profusion in Silhouette and Mahé, sparingly on Praslin. Most, if not all, of the specimens are from the mountain-forests, from a number of different places and elevations: one was taken from a rotten and fungus-grown fallen trunk of the endemic "Bois Rouge" (*Formia ferruginea*). Many of these examples are now in bad condition, very few having the cinereous markings intact. Recognizable by the slender, nigro-clavate antennæ, with stout second joint, the variegate legs, and the densely punctured, cinereomaculate surface. The antennæ seem to be a little shorter in the females. The variegate vestiture of the elytra is common to many species of the genus. The beautiful example figured was accidentally injured by the artist after the drawing was completed and finally corrected.

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16. *Xylophilus seychellarum*, sp. n. (Pl. VI. fig. 8, ♂.)

Rather short, moderately shining, nigro-piceous or piceous, the base and tip of the antennæ, the palpi, the base of the prothorax in the middle in some examples, the humeri or base of the elytra, and the legs testaceous, clothed with a fine sericeous pubescence. Head short, together with the eyes much wider than the prothorax, finely punctate; eyes large, occupying almost the whole of the sides of the head, separated anteriorly by about half the width of one of them in ♂, more distant in ♀, feebly emarginate; antennæ (♂) finely pubescent, long, slender, joint 2 short, 3-10 moderately elongate, becoming gradually shorter and wider, 9 and 10 subtriangular, 11 stouter, obliquely acuminate, nearly as long as 9 and 10 united. (♀) similar, but much shorter. Prothorax convex, broader than long, parallel-sided at the base, closely, finely punctate, with an interrupted arcuate depression on the disc behind. Elytra convex, rather short, at the middle about twice as wide as the prothorax, slightly rounded at the sides; closely, moderately coarsely punctate, obliquely depressed on the disc below the base. Legs rather long, slender; posterior femora moderately incrassate, simple in both sexes; basal joint of posterior tarsi feebly curved.

Length  $1\frac{1}{4}$ - $1\frac{1}{2}$  mm. (♂ ♀.)

*Loc.* Seychelles: Silhouette, Mahé.

Most of the examples were collected in the forests, but in Silhouette at least one was taken in the low country. Eighteen specimens, varying a little in colour, immature examples having the elytra paler. In this species the antennæ are moderately elongate in ♂, shorter in ♀, slender and very gradually widened outwards to the stouter apical joint in both sexes. The type of coloration is common to many members of the genus, some of which have peculiarly formed posterior femora in ♂.

Fam. *Mordellidæ*.*MORDELLA*.

*Mordella*, Linnaeus, *Syst. Nat.* 16th ed. i. p. 420 (1758).

17. *Mordella braueri*.

*Mordella braueri*, Kolbe, *Mittel. Zool. Mus. Berlin*, v. p. 27.

*Loc.* Seychelles: Mahé (*Brauer*).

This insect is described as deep black and albo-maculate;

the prothorax with six spots—two, semilunate, on the anterior portion and four, confluent, near the base; the elytra with four spots—one sub-basal, median, one submarginal, posthumeral, one subsutural, a little before the middle, and one anteapical. It is compared with the Asiatic *M. composita*, Walk., and the African *M. elegans*, Mäkl.

The unique example known measures 14 mm. in length.

18. *Mordella peregrinator*, sp. n.

(Pl. VI. fig. 10, ♀.)

Robust, elongate, cuneiform, deep black, the anterior coxæ, the anterior femora in part, and the palpi testaceous, the antennæ often fuscous, with the base testaceous; clothed with black and whitish or cinereous pubescence, which is condensed into the following sharply defined markings:—The head with a large patch on the middle of the vertex, and the prothorax with an interrupted median vitta and a large triangular mark on each side of it, infuscate or black, for the rest whitish, cinereous, or flavo-cinereous; the elytra with three strongly angulate narrow fasciæ—one sub-basal, irregularly branching forwards (enclosing an oblique oval spot on the disc, an oblique humeral streak, a common postscutellar patch, and sometimes a small spot on each side of it), and one a little before and another just beyond the middle, these two connected along the suture—and a broader, simply arcuate, transverse fascia just before the apex, whitish or cinereous, for the rest black; the ventral segments at the base or laterally, the side-pieces of the metasternum, and the pygidium in great part above, also white. Antennæ slender, moderately long in ♂, shorter in ♀, joint 2 shorter and stouter than 3, 3–11 nearly equal in length, 5–10 serrate; last joint of maxillary palpi greatly developed, very broadly securiform, nearly as wide as the inter-antennal portion of the head in both sexes. Prothorax broader than the head and elytra, deeply bisinuate at the base, rounded at the sides. Elytra long, narrowing from the base. Pygidium very long, compressed, acute at tip. Ventral segment 5 hollowed down the middle posteriorly in ♂. Anterior femora and tibiæ simply pubescent in both sexes.

Length (excl. head)  $6\frac{1}{2}$ – $8\frac{1}{2}$ , to tip of pygidium  $8\frac{1}{2}$ – $11\frac{1}{2}$ ; breadth (prothorax)  $2\frac{1}{2}$ – $3\frac{1}{2}$  mm. (♂ ♀.)

Loc. Seychelles: Silhouette; Round I. Java; Borneo; Singapore; Philippines; Malacca; Ceylon, &c.

One ♀ specimen from Silhouette (Marc aux Cochons, ix. 1908). This is apparently a common species in Borneo,

Ceylon, &c., but it cannot be identified from any of the published descriptions. There is a long series of it in the British Museum from many different localities; and Mr. Bryant has recently captured numerous examples in Borneo. *M. miata*, F., from New Guinea &c., is an allied form, and an unnamed insect from the Andaman Is. in the Museum collection is, perhaps, a variety of the present species. *M. composita*, Walk., has very different elytral markings.

#### 19. *Mordella disparilis*, sp. n.

♂. Moderately elongate, rather narrow; black, the head (except a large transverse patch on the vertex, which is sometimes wanting), mouth-parts, joints 1-3 of the antennæ, the sides of the prothorax broadly, the elytra each with an oblique stripe extending from the shoulder to near the suture and a curved or oblique fascia just beyond extending narrowly backwards along the suture to near the tip (the latter sometimes nearly or quite obsolete, or represented by yellowish pubescence), the anterior coxæ, femora, and tibiae, the intermediate tibiae, the extreme base of the posterior tibiae, and the calcaria testaceous or rufo-testaceous; variegated with cinereous, flavo-cinereous, and fuscous pubescence, the flavo-cinereous hairs mostly placed on the fasciate portions of the surface, the vestiture of the under surface almost wholly cinereous. Antennæ moderately long, slender, joints 2 and 3 very short, equal in length, 4-11 much longer than broad, subserrate. Terminal joint of maxillary palpi rather stout, subtriangular. Prothorax transverse, a little broader than the elytra, rounded at the sides. Elytra narrowing from the base. Pygidium about as long as the posterior tarsi. Anterior femora beneath, and anterior tibiae at the base within, fuscociliate.

♀. Similar to ♂, but with the head, prothorax, and intermediate femora infuscate, the antennæ a little shorter, the anterior femora and tibiae without longer hairs.

*Var.* The oblique elytral fasciæ connected along the middle of the disc.

Length (incl. pygid.)  $3\frac{3}{4}$ -4 $\frac{1}{2}$  mm. (♂ ♀.)

*Loc.* Seychelles: Silhouette, Mahé.

Eleven examples; the six from Silhouette were taken in the high forest above Mare aux Cochons and in the low coconut-planted country near the coast at Pointe Étienne, ix. 1903; the five from Mahé were collected in the forest at the summit of Morne Pilot, over 2000 feet, in the Mare aux

Cachons district at about 1500 feet, and in the forest above Cascade Estate.

The eleven specimens vary in the development of the oblique testaceous elytral fasciæ, the posterior one being sometimes obsolete and in one example (♀) united to the anterior one. The dissimilarly coloured sexes were obtained in each island. *M. biformis*, from Central America, and the European *Mordellistena abdominalis* are parallel cases of sexual dimorphism. *M. disparilis* (♀) seems to be related to *M. homochroa*, Fairm., from Diego Suarez, but without comparison of types it would be unsafe to identify it with that insect. The variety with confluent fasciæ was found in a burrow in a stick in the jungle at Silhouette.

#### MORDELLISTENA.

*Mordellistena*, Costa, Faun. Regn. Napol., Mordellid. pp. 16, 31 (1854).

A genus of world-wide distribution and abundantly represented within the tropics. One species from the Seychelles has been described by Kolbe and three from Madagascar by Fairmaire. *Mordella castanea*, Boh., from Guam, and various others from the adjacent regions referred to *Mordella* by the elder authors may belong here. Mr. Scott's collections include about two hundred specimens, belonging to seven species. One of these insects was bred from larvæ found in the wood of *Colea pedunculata*. The appended table will help in the identification of these closely allied forms. The sexes have been identified in nearly every case by an examination of the genitalia of one or more examples of each species. The antennal structure is completely ignored by nearly all authors, presumably owing to difficulties of manipulation:—

Tibial and tarsal formula—4 or 5, 3 or 4, 2, 2;	
body uniformly coloured.	
Fourth antennal joint as long as fifth . . . . .	<i>malena</i> , Kolbe.
Fourth antennal joint much shorter than fifth.	<i>depressa</i> , sp. n.
Tibial and tarsal formula—4, 3, 2, 1; head in ♂ ♀, and prothorax also in ♂, testaceous or rufo-testaceous; elytra cinereo-lilasciata . .	
	<i>partilis</i> , sp. n.
Tibial and tarsal formula—3, 3, 2, 6; fourth antennal joint short; body uniformly coloured, fusco-castaneous, robust . . . . .	
	<i>colea</i> , sp. n.
Tibial and tarsal formula—3, 2, 2, 0; fourth antennal joint short.	
Body uniformly coloured, fusco-castaneous, ferruginous, or testaceous above.	
Antennal joints 5-11 elongate . . . . .	<i>septemcarinata</i> , sp. n.

Antennal joints 5-11 not much longer than broad .....	<i>dirempta</i> , sp. n.
Body black, griseo-pubescent; head partly testaceous in ♂ .....	<i>argutula</i> , sp. n.

20. *Mordellistena mahena*.

(Text-fig. 3, posterior leg.)

*Mordellistena mahena*, Kolbe, Mittteil. Zool. Mus. Berlin, v. p. 28 (1910).

Moderately elongate, cuneiform, rather narrow; castaneous or fusco-castaneous, thickly clothed with greyish-brown pubescence. Antennae filiform, very long in ♂, shorter in ♀, joints 1 and 2 shorter than 3, 3 in ♂ about one-third, and in ♀ one-half, the length of 4, 4-11 equal in length. Apical joint of maxillary palpi stout, securiform.

Fig. 3.

*Mordellistena mahena*, Kolbe. Posterior leg.

Pygidium long, acuminate, as long as hind tarsus. Posterior tibiae with 4 or 5, first joint of posterior tarsi with 3 or 4, and the second and third joints each with 2, oblique ridges.

Length (incl. pygid.)  $3\frac{1}{3}$ - $4\frac{1}{2}$  mm. (♂ ♀.)

Loc. Seychelles: Mahé, Long Island, Round Island, Félicité, Marie Anne.

This species was originally taken in Mahé by Brauer;

several examples were obtained by Mr. Scott in the same island in x. and xi. 1908 near Morne Blanc, not in the highest forests, but between 500 and 1000 feet. A few were collected at Long and Round Islands, small cultivated islets off Port Victoria, Mahé, vii. 1908. Several were also found in Félicité and Marie Anne Islands, xii. 1908, in a rather dry type of forest near sea-level.

Kolbe's description was made from a single example, and, as the antennal structure is not mentioned by him, it is not quite certain whether the name should be applied to this or the following species. The first ridge on the posterior tibiae and first tarsal joint is at most feebly developed and often wanting. Amongst the series examined there are at least two of each sex with the genital organs extruded, so that there can be no mistake as to their identification.

#### 21. *Mordellistena depressa*, sp. n.

Extremely like *M. mahéna*, but differing from it in having the antennae less elongate in both sexes (in ♂ about as long as in ♀ of *M. mahéna*), comparatively short and subserrate in ♀, joints 3 and 4 small and equal in length in the two sexes, 5 twice as long as 4, 5-11 moderately elongate in ♂. Posterior tibiae and tarsi as in *M. mahéna*.

Length (incl. pygid.)  $3\frac{1}{2}$ - $4\frac{1}{2}$  mm. (♂ ♀.)

Loc. Seychelles: Mahé, Silhouette.

Nine specimens, eight of which are from Mahé. All are from the mountain-forests. These appear at first sight to be females of *M. mahéna*; but as there is no corresponding variation in the development of the antennae in the long series of the allied forms from the Seychelles, the examples with a short fourth joint must be separated from the rest. *M. depressa*, therefore, is based upon examples with seven, and *M. mahéna* with eight, elongated antennal joints.

#### 22. *Mordellistena partilis*, sp. n.

♂. Rather short, narrow, convex; black, the head, antennae, mouth-parts, prothorax, anterior and intermediate legs, and the posterior tibiae and tarsi in part, testaceous; the elytra variegated with cinereous and black pubescence, the latter condensed into a very large transverse patch at the base (not quite reaching the suture) and a common, broad, postmedian fascia (leaving a sharply defined submedian and apical fascia cinereous), the vestiture of the pygidium and under surface cinereous, that of the head and



prothorax flavo-cinereous. Antennæ moderately long, slender, joints 1 and 2 rather stout, 2 shorter than 1, 3 and 4 small, subequal in length, 5-10 longer than broad, subserrate. Apical joint of maxillary palpi stout, securiform. Prothorax transverse, rounded at the sides anteriorly, not wider than the elytra. Elytra relatively short, subparallel in their basal half. Pygidium long, acute, as long as posterior tarsus. Posterior tibiæ with 4, first joint of posterior tarsi with 3, and the second joint with 2, short oblique-ridges, the third joint also with an indication of a single ridge.

♀. Similar to ♂, but with the prothorax infusate or black, the basal margin at most testaceous, the antennæ a little shorter.

Length (incl. pygid.)  $2\frac{1}{2}$ -3 mm. (♂ ♀.)

Loc. Seychelles: Mahé, Silhouette.

One male and four females—both sexes from Mahé, a female only from Silhouette. The Silhouette specimen is from near Mont Pot-à-can, about 1500 feet; those from Mahé were all found in the forests above Cascade Estate at about 1000 feet. Easily distinguished from the other Seychelles forms by the sharply defined elytral markings, the single male with both the head and prothorax testaceous. The prothorax is more transverse than in *M. argutula*. The anterior femora are not ciliate in ♂.

23. *Mordellistena coleæ*, sp. n.

(Text-fig. 4, posterior leg.)

Moderately elongate, cuneiform, robust; fusco-castaneous or castaneous, thickly clothed with greyish-brown pubescence. Antennæ with joints 3 and 4 short, equal, 5 at least twice as long as 4, 5-11 rather broad, compressed, elongated, and 11 longer than 10, in ♂, 5-11 shorter and subserrate in ♀. Last joint of maxillary palpi rather narrow, elongate-triangular. Pygidium elongate, about as long as hind tarsus. Anterior tibiæ slender, sinuous within. Posterior tibiæ with 3 ridges—two very long and oblique, and a shorter apical one—and with from 3-5 stiff erect setæ along their lower edge in both sexes. First joint of posterior tarsi with 3, and the second joint with 2, oblique ridges, the third unarmed.

Length (incl. pygid.)  $3\frac{1}{2}$ - $5\frac{1}{2}$  mm. (♂ ♀.)

Loc. Seychelles: Mahé, Silhouette.

Numerous examples from each island. Extremely like *M. mahéna* and *M. degressa*, but averaging larger in size, the

terminal joint of the maxillary palpi narrower and more elongate, the antennae distinctly wider, with short fourth joint as in *M. depressa*, the posterior tibiae strongly, sparsely setose along their lower edge, the third joint of the posterior tarsi without definite ridges. Three of the Silhouette specimens are labelled as having been bred from larvæ found

Fig. 4.

*Mordellistena coleae*, Champion. Posterior leg.

in the wood of an endemic tree, the "Bilimbi marron," *Colea pedunculata*; another from the same locality is marked "bred from a pupa" found in same tree. All the examples are from various places in the mountain-forests, at altitudes ranging from about 1000 to 2000 feet.

24. *Mordellistena septemcarinata*, sp. n.

Moderately elongate, narrow, convex, shining; ferruginous or castaneous, the eyes black, the under surface in part and the base of the pygidium black or piceous; thickly clothed with greyish-brown pubescence. Antennae long in ♂, slightly shorter in ♀, slender, filiform, joints 2 and 4 short, 4 a little longer and wider than 3, subtriangular, 5-11 elongate, subequal, 5 about twice as long as 4. Apical joint of maxillary palpi moderately stout, subtriangular. Prothorax broader than long, not wider than the elytra. Elytra subparallel in their basal third, gradually narrowing from the middle, somewhat coarsely and not very densely

## XIII.—On new Species of Indian Curculionidæ.—Part III.

By GUY A. K. MARSHALL, D.Sc.

## Subfamily EREMNIÆ.

## GENUS PELTOTRACHELUS, NOV.

*Head* continuous with the rostrum, the eyes comparatively small and widely separated. *Rostrum* about as long as the prothorax, its sides sloping outwards from the carinae bounding the median area, the genæ more or less dilated, the apical emargination deep and triangular; the scrobes apical and short, visible from above; the lateral areas impressed and with two furrows—one running just below the dorso-lateral carina, the other passing from the lower corner of the scrobe to the lower margin of the eye; the buccal aperture extremely oblique and much longer than the lower surface of the rostrum, the mentum bearing only two setæ. *Antennæ* with the scape but little curved, subcylindrical, slightly thickened towards the apex, and reaching beyond the front margin of the thorax; the funicle variable; the club narrowly spindle-shaped. *Prothorax* transverse, the base deeply bisinuate and broader than the apex, the ocular lobes developed or not, but vibrissæ always present. *Scutellum* small. *Elytra* with the shoulders obliquely rounded and not prominent, the dorsal outline flat or only slightly convex, the declivity steep, the apices separately rounded, the striae partly hidden by the dense scaling. *Legs* with the front coxæ nearer the anterior margin of the prosternum; the femora moderately clavate and with a small tooth; the tibiae simple, the corbels of the hind pair quite open; the claws small and free.

Type, *Platytrachelus pubes*, Fst.

The species included in this genus were erroneously attributed by Faust to *Platytrachelus*, Schh., owing to his having wrongly identified the genotype, *P. pistaciæ*, Boh. Some years ago, through the kindness of Dr. Taschenberg, I was able to examine the type of that species, which is in Germar's collection in Halle: it proved to be identical with *Amblyrhinus viridanus*, Fst. (Stett. ent. Zeit. 1890, p. 74). *Platytrachelus* differs from *Peltotrachelus* principally in the structure of the rostrum, which has the median area broad and the sides vertical; the scrobes are therefore quite invisible from above and extend backwards for more than half the length of the rostrum. The only other species of

true *Platytrachelus* known to me are *Amblyrrhinus psittaceus*, Est., and *Corigetus paciei*, Auriv., both of which occur in Indo-China.

The other described species of *Peltotrachelus* are *Platytrachelus propinquus*, Est., *P. ovis*, Hell., *Cyphicerus juvenis*, Est. (= *Mylocerus acaciæ*, Stebb.), *Acanthotrachelus albus*, Pasc., and *Mylocerus isabellinus*, Boh.

*Peltotrachelus cognatus*, sp. n.

♂ ♀. Colour black or piceous, with dense grey scaling and with the following denuded areas on the elytra:—A transverse patch just behind the scutellum, extending to about the fourth stria; a dentate transverse band before the middle, which is only broken at the suture; a similar but complete and more curved band behind the middle; these patches often partly obscured by whitish or yellowish powdering.

*Head* with the eyes lateral and almost flat; the forehead with a central fovea. *Rostrum* longer than its basal width, slightly narrowed from the base to beyond the middle, and dilated at the apex; the dorsal area broadly and rather deeply impressed; the submentum with a projecting tooth. *Antennæ* with the second funicular joint much longer than the first, the others longer than broad. *Prothorax* with the sides slightly rounded and shallowly constricted at the apex, the postocular lobes prominent, the dorsal anterior margin rounded; the upper surface with rather coarse confluent punctation, and with a very shallow transverse impression before and a small rounded one behind the middle on each side. *Elytra* nearly parallel-sided (♂) or dilated behind the middle (♀), the intervals distinctly broader than the shallow striae and with short curved irregular setae.

Length 6-7, breadth  $2\frac{1}{2}$ -3 mm.

*MAHARAS:* Yercaud, 4500 ft., Shevaroy Hills (*T. Bainbrigge Fletcher*).

Very closely allied to *P. pubes*, Est., but differing in its colouring and its larger and less convex eyes; the rostrum is longer and more deeply impressed, the prothorax is more narrowed in front, the shoulders of the elytra are less prominent, and the sides more dilated behind in the female.

*Peltotrachelus rugipennis*, sp. n.

Colour black, with rather thin pale green scaling, which is often more or less abraded.

*Head* with the eyes lateral, elongate, and only slightly

convex, the forehead thinly pubescent and without green scaling. *Rostrum* much longer than its width at the base, almost parallel-sided in the basal half, and strongly dilated anteriorly, the basal area broadly and rather deeply impressed, the median part of the submentum elevated into a sharp conical process with the point directed backwards. *Antennæ* with the scape gently curved and gradually thickened; the funicle with joint 2 longer than 1, and 3 to 7 longer than broad. *Prothorax* with the sides subparallel in the basal half and narrowed in front, the dorsal anterior edge very slightly rounded, the ocular lobes strongly produced; the upper surface with close confluent punctation which is not very distinct through the scaling, with a faint transverse impression before the middle and a deeper rounded impression on each side behind. *Elytra* with rows of large foveæ, the intervals very narrow and irregular; in the vicinity of the suture the spaces between the foveæ are slightly raised, so that the surface appears transversely rugose; the setæ extremely short, dense, and suberect.

Length  $5\frac{3}{4}$ -7, breadth  $2\frac{1}{2}$ -3 mm.

MADRAS: Anaimalai Hills (*H. L. Andrewes*).

*Peltotrachelus illobatus*, sp. n.

Black, with dense pale green or greenish-grey scaling throughout, the head and prothorax with a yellowish tinge.

*Head* with the eyes rather prominent and lateral; forehead with a short central stria. *Rostrum* longer than broad, very gradually dilated from the middle to the apex, the dorsal carinae more elevated than usual and continued on to the forehead. *Antennæ* with the scape distinctly curved; the funicle with joint 2 longer than 1, the latter longer than 3 and 4 together, 5-7 much longer than broad. *Prothorax* with the sides almost straight and strongly narrowed from base to apex, the dorsal anterior margin straight, the ocular lobes absent, being replaced by a tuft of yellow vibrissæ, the upper surface rather rugosely punctate, especially towards the sides. *Elytra* broadest behind the middle (♀), with rather deep and coarsely punctate striæ, which, however, appear very narrow and finely punctate when the scaling is intact; the setæ mostly very short and depressed, but scattered among them a number of comparatively long erect setæ.

Length 7, breadth  $3\frac{1}{2}$  mm.

BURMA: Taung-ngu (*G. Q. Corbett*). CAMBODIA (*Mouhot*).

*Peltotracheus smaragdus*, sp. n.

Black, with dense bright green scaling, the head usually with pinkish scales; sometimes the insect is covered with a more or less dense whitish coating over the green scaling.

*Head* with the eyes very small, prominent and lateral; forehead with a central fovea. *Rostrum* longer than broad, only slightly dilated at the apex, the dorsal area broadly impressed, the under surface normal and with no projection. *Antennæ* with the scape almost straight; the funicle with joint 2 nearly twice as long as 1, 1 hardly longer than 3, and 3 to 7 much longer than broad. *Prothorax* with the sides scarcely curved, only slightly narrower at the apex than at the base, the dorsal anterior margin straight, the ocular lobes absent, being replaced by a tuft of golden-yellow vibrissæ; the upper surface closely punctate and with a shallow fovea on each side behind the middle. *Elytra* with fine distinctly punctate striae and broad intervals where the scaling is intact, the striae being a good deal broader when the scaling is removed, but even then distinctly narrower than the intervals; the setæ extremely short, dense, and suberect.

Length 4-6, breadth 2-3 mm.

MADRAS: Nilgiri Hills (Sir G. Hampson, H. L. Andrewes).

A very distinct species. Apart from the absence of the ocular lobes, the facies is that of a typical *Peltotracheus*.

Genus *MEIXOOPS*, nov.

*Head* separated from the rostrum by a very shallow transverse impression; the eyes widely separated, comparatively small, and almost circular. *Rostrum* rather broad and stout, longer than its basal width, the buccal aperture oblique, the apical emargination angular but rather shallow; the true scrobe apical and very short, the space from the scrobe to the eye broadly impressed. *Antennæ* elongate and comparatively slender; the scape cylindrical, abruptly clavate, and curved only towards the apex; the funicle with joint 1 much longer than 2, 3 to 7 subequal, and the club narrowly spindle-shaped. *Prothorax* simple, strongly transverse, the sides rounded, its greatest width almost or quite equal to that of the elytra, the apex narrower than the base, the latter truncate or faintly bisinuate, the ocular lobes not very prominent, broadly rounded and with short vibrissæ, the front coxæ placed in the centre of the prosternum. *Scutellum* small. *Elytra* with the base vertically truncate, its margin being

slightly raised, the shoulders feeble and obliquely rounded, punctato-striate, the intervals smooth and even. *Legs* with the femora strongly clavate and having a rather large tooth, all the tibiae sinuate internally near the base, the corbels of the hind pair entirely open, the tarsal claws free.

Type, *M. aspersus*, sp. n.

Allied to *Phytoscapus*, Seh., but differing from it in the very broad and rounded prothorax, the vertical basal margin of the elytra, and the small and widely separated eyes.

*Meionops aspersus*, sp. n.

Colour piceous, with chocolate-brown scaling and pale markings; the head fawn-coloured; the prothorax with a broad dorsal and narrower lateral stripe of yellowish-creamy scales; the elytra with a similarly coloured, broad, irregular, and broken lateral stripe, and with small pale spots on the disk, which often coalesce along the suture.

*Rostrum* only slightly widened at the apex, the dorsal area almost plane and with a fine central carina, the lateral area with a deep narrow furrow running towards the upper edge of the eye and a broader one beneath the scrobe. *Antennae* with joints 3 to 7 of the funicle about as long as broad. *Prothorax* not quite as broad as the elytra at the shoulders, the base slightly bisinuate, the upper surface with shallow punctures and slightly granulate, the sculpture being almost hidden by the scaling. *Elytra* jointly sinuate at the base, the apices jointly rounded, slightly broader behind the middle, the striae shallow, with very large subquadrate punctures (somewhat hidden by scaling), the intervals almost plane and smooth, with minute subdepressed setae.

Length  $5\frac{3}{4}$ -6, breadth  $2\frac{1}{2}$ -3 mm.

ASSAM.

*Meionops glaucinus*, sp. n.

Colour black, with dark greenish-grey scaling throughout.

*Rostrum* with the dorsal area almost plane and without a carina. *Antennae* with joints 3 to 7 of the funicle evidently longer than broad. *Prothorax* as broad as the elytra at the shoulders, the base truncate, the apical portion shallowly constricted. *Elytra* truncate at the base, the sides parallel to beyond the middle, the punctures smaller.

In other respects agrees with *M. aspersus*, Mshl.

Length 5, breadth  $2\frac{1}{4}$  mm.

W. BENGAL: Chota Nagpur (Cardon).

## Subfamily ANTHONOMINÆ.

## Genus ONYCHOCNEMIS, nov.

*Head* exserted, subconical; the eyes lateral, small, almost circular. *Rostrum* broad, flattened dorso-ventrally, longer than the head or the front tibia, almost straight, deflected, forming a continuous line with the head, and with the apical margin entire; the scrobes narrow and deep, beginning at about one-third from the apex and continued obliquely to beneath the base of the rostrum; the mentum small, subquadrate, about as long as its supporting peduncle, convex, impunctate, and very shining. *Antennæ* short, geniculate; the scape almost straight, clavate, reaching the middle of the eye; the funicle 7-jointed, joint 1 swollen and longer than any of the others, 2 subconical and as long as broad, the remainder strongly transverse, very closely packed, and rapidly widening outwardly, joint 7 being closely annexed to the club, which is broadly ovate and 3-jointed. *Prothoracæ* without postocular lobes, and with the base bisinuate. *Scutellum* distinct, circular. *Elytra* oblong, broader than the prothorax, entirely covering the pygidium, with distinct shoulders and ten striæ. *Legs* short and stout; the hind coxæ ovate, not reaching the edge of elytra; the femora moderately clavate and not toothed, the hind pair not nearly reaching the apex of the elytra; the tibiæ almost straight, slightly compressed, strongly uncinatè at the apex, and also with a short sharp mucro projecting perpendicularly from the inner angle; the tarsi broad, joint 2 transverse, 3 broadly lobate, 4 short, the lower surface clothed with fine pale pubescence, which is sparse on the two basal joints, the claws very small and connate at the base. *Sternum*: the prosternum very short, with the front margin shallowly sinuate, the coxæ in the middle and narrowly separated; the mesosternum with the epimera not ascending and broadly separating the episterna from the elytra, the intercoxal process broadly truncate at the apex; the metasternum between the coxæ about as long as the middle coxæ, the episterna comparatively broad. *Venter* with the intercoxal process broadly rounded, the two basal segments fused together and delimited only by an almost straight shallow stria, the intermediate segments not angulated externally, 2 almost as long as 3+4 in the middle, and 5 but little longer than 4.

Type, *Onychocnemis cureye*, sp. n.

Allied to the European *Bradybanus*, Germ., and the South-African *Thamnobius*, Schh. The former genus differs in its



much longer, more slender, and cylindrical rostrum, its simply uncinatæ tibiæ, free and bifid tarsal claws, and dentate front femora. In *Thamnobius* the rostrum is also more cylindrical, the scape does not exceed the front margin of the eye, the tibiæ are merely uncinatæ (not mucronate, as stated by Lacordaire), and the tarsal claws are free and appendiculate.

*Oxyhocnemis careyæ*, sp. n.

♂ ♀. Colour red-brown, shining and sparsely clothed with short recumbent white setæ; the head darker; the elytra with the entire suture blackish brown, as well as a large common patch extending from the base to beyond the middle and laterally as far as the fifth stria, its outline being very similar to that of the elytra; the mesosternum, metasternum, tarsal claws, and the two apical hooks of the tibia also dark brown or blackish.

*Head* rugosely punctate, the forehead a little narrower than the base of the rostrum and broader than the eye. *Rostrum* very gradually widened from base to apex, rugosely punctate above from the base to the end of the scrobe, the apical area more lightly punctate (♂) or impunctate (♀). *Prothorax* subconical, almost as long as its width at the base, gradually narrowed from there to the apex, the sides gently rounded, without any anterior constriction, the basal angles nearly right angles, the base angularly produced in the middle, the apical margin very shallowly sinuate dorsally and oblique at the sides; the upper surface with coarse reticulate punctation throughout and with a median stripe of denser pale recumbent setæ. *Elytra* almost parallel-sided from the shoulders to well behind the middle, broadly rounded behind, the apices continuous, the basal margin slightly raised and almost straight from the second stria to the shoulders; the striae broad, containing deep closely-set punctures, which diminish behind, the intervals scarcely broader than the striae, almost flat and finely aciculate, the posterior callus nearly obsolete; the dorsal outline flat from the base to the middle, then gradually declivous. *Legs* coarsely punctate and clothed with curved white setæ.

Length 2-2½, breadth 1-1½ mm.

*Myxore*: Madhavgiri (H. H. Mann, Pusa Coll.).

This species was found on the leaves of the jak-fruit tree (*Careya arborea*).

## Subfamily OMOPHORINÆ.

## Genus TELUROPUS, nov.

*Head* globose, with the eyes lateral. *Rostrum* stout, about as long as the front tibia, somewhat depressed, the apical margin very shallowly sinuate; the scrobes invisible from above, beginning at some distance from the apex, curving rapidly downwards behind the antennæ, and ending in a flattened punctate area almost on the lower surface of the base of the rostrum; mandibles stout, tridentate; mentum small and square, about equal in length to the peduncle of the submentum, and not broader than the lateral space on each side of it. *Prothorax* with the basal margin deeply bisinuate; the anterior margin oblique at the sides and without any postocular lobes. *Scutellum* distinct, almost circular. *Elytra* short and broad, with ten complete striæ; the inflexed lateral margin unusually narrow, involving only the tenth stria, and without true epipleuræ. *Wings* fully developed. *Legs* short and stout; the femora only slightly clavate and each with a small tooth, the hind pair scarcely reaching the apex of the elytra; the tibiæ with the external apical angle strongly uncinatè, and the inner angle with a sharp mucro as well; the tarsi short and broad, the second joint twice as broad as long, the fourth projecting only a short distance beyond the third, the claws simple and stout. *Sternum* with the front coxæ very widely separated and placed behind the middle, the space between them quite flat; the median coxæ still further apart, the side-pieces of the mesosternum fused together but divided by a stria, the suture between the mesosternum and episternum entirely obliterated, and the intercoxal piece broadly truncate; the length of the metasternum between the coxæ not greater than that of the median coxæ, the episterna as broad as the base of the mid-femora and fused with the metasternum, but the line of junction quite distinct, the epimera imperceptible; the hind coxæ as widely separated as the middle pair. *Venter* short, with segment 2 nearly as long as 3+4 and separated from 1 by a deep straight incision, the intercoxal process very short and broad, with an angular projection in the middle, and segments 2 and 3 angulate externally.

Type, *Teluropus subcostatus*, sp. n.

In general form the only known species bears considerable resemblance to the African genus *Omophorus*, Schh.\*, and

\* In most collections this genus stands under the later name *Metatyses*, Pasc. *M. turritus*, Pasc., is a synonym of *O. stomachosus*, Boh., while *M. parvus*, Est., is identical with *O. indispotus*, Boh., the type of which is now in the Oxford University Museum (Sommer's collection).

the Fijian *Physarchus*, Pasc., except that the shoulders of the elytra are much less prominent. But both these genera differ, *inter alia*, in the absence of the inner apical murex on the tibiae, and in having the front coxæ contiguous and the hind pair much closer together than the middle pair.

*Teluropus ballardi*, sp. n.

♂. Dark red-brown, fairly closely clothed with short, curved, golden-brown setæ.

*Head* rugosely punctured throughout, the forehead almost as broad as the base of the rostrum, transversely flattened and with a central fovea; the eyes almost circular, their greatest depth at about one-fourth from the hind margin. *Rostrum* stout, parallel-sided, and porrect from the base to a little beyond the middle, thence slightly widened and curved downwards, somewhat flattened longitudinally at the sides in the basal half, and rugosely punctured throughout right up to the apex. *Antennæ* short; the scape stout, slightly compressed, strongly clavate, and coarsely punctate; the funicle with joint 1 rather longer than 2, and joints 2 to 7 of about equal width and widening regularly outwards, 7 being closely fitted to the club, which has three distinct joints. *Prothorax* broader than long, broadest near the base and rapidly narrowing in front, with a broad apical constriction, the anterior margin straight, the base with a large median lobe, which is emarginate at its apex; the upper surface convex, coarsely and confluent punctate throughout, and with two low broad elevations in the middle of the disk; these merge and slope gradually away behind, but in front they are abruptly narrowed where they cross the apical constriction and enclose a large rounded depression between them; below these prominences on each side is another much lower rounded elevation. *Elytra* together nearly as broad as long, parallel-sided from the shoulders to beyond the middle, and very broadly rounded behind; each elytron strongly lobate at the base, the greatest depth of the lobe being at the third interval, which bears a slight basal callus; the juxta-basal area slopes steeply forwards from a transverse postbasal ridge, which bears a rounded prominence on intervals 3 and 5; a little behind this is a short costate elevation on interval 3 and a less distinct one on 5; the striae are deep and strongly punctate and the intervals are rugose, the alternate ones being slightly more convex. *Legs* rugosely punctate, the femora with scattered granules, set with curved suberect

setæ; the anterior pairs of tibiae rather sharply angulate on the lower surface not far from the base.

Length  $4\frac{1}{2}$ -5, breadth  $2\frac{1}{2}$ -3 mm.

MADRAS: Coimbatore (*E. Ballard*, type). MYSORE: Madhavgiri, on leaves of jak-fruit, *Careya arborea* (*H. H. Mann*, Pusa Coll.).

#### Subfamily ISORRHYNCHINÆ.

##### *Phænomerus angulicollis*, sp. n.

♀. Colour black, sparsely clothed with rather stout, transversely recumbent, pale yellowish, hair-like scales, having the following patches apparently bare, but really clothed with similar black hairs which are not very conspicuous:—A large transverse patch on the anterior half of the prothorax, and two irregular patches on each elytron, one before and the other behind the middle.

*Head* with scattered punctures, the eyes a little more widely separated than in *P. sundewalli*. *Rostrum* red-brown, the thickened basal portion forming about one-fourth of the whole, and not sulcate, but with two posteriorly convergent rows of fine punctures on the disk; the scrobes continued to beyond the middle as a shallow punctate furrow, and with a fine stria just above them. *Prothorax* at least two and a half times as long as its basal width, the sides obtusely angulated in front of the middle, the dorsal margin bounded by a fine carina in the basal half, the upper surface with reticulate punctures which are longitudinally subcoalescent, leaving a distinct smooth central carina. *Elytra* narrowly cylindrical, about as broad as the prothorax at its angulation, with shallow striae containing closely set transverse punctures, the intervals narrowly carinate, except the four outer ones, which are broader and almost flat. *Legs* similar to those of *P. sundewalli*, except that the large tooth on the elongate hind femora is more deeply sinuate at the base of its posterior edge, so that this edge is distinctly angulated in the middle.

Length  $3\frac{1}{4}$ , breadth  $\frac{3}{4}$  mm.

BENGAL: Sanderbans, 13. ii. 1915 (*C. F. C. Beeson*).

Very similar superficially to *P. sundewalli*, Boh., but distinguished by its obviously narrower build, more widely separated eyes, the lateral angulation and basal lateral carina of the prothorax, and the shape of the tooth on the hind femora.

Found in burrows in sundri-trees (*Heritiera littoralis*).

*Phænomerus brevirostris*, sp. n.

♂ ♀. Colouring similar to that of *P. angulicollis*, but the pale scales more generally distributed, so that the dark patch on the prothorax is indistinct and those on the elytra are very much reduced.

*Head* with close shallow punctures, the forehead broad, about twice the breadth of the funicle. *Rostrum* unusually short and stout, the thickened basal portion forming half (♀) or more than half (♂) its length, and bearing two or four shallow furrows, the apical area smooth and sparsely punctate; the scrobe continued to well beyond the middle in both sexes, but without any distinct furrow above it. *Antennæ* short, all the joints of the funicle except the first very strongly transverse, the club shorter and more obtuse than in *P. sundewalli*. *Prothorax* about twice as long as broad, parallel-sided from the base to beyond the middle, thence narrowing gradually to the apex, the upper surface simply reticulate, the punctures not coalescing longitudinally, with an indistinct central costa. *Elytra* cylindrical, very slightly broader than the prothorax, with coarsely punctate striae, the dorsal intervals narrow, subcarinate, and crenulate. *Legs* as in *P. sundewalli*, except that the hind femora are much shorter, extending only a short distance beyond the apex of the elytra, the basal stem is more rapidly widened, and the large tooth is more deeply sinuate at the base of its posterior edge, so that the edge is distinctly angulated in the middle.

Length 3, breadth  $\frac{3}{4}$  mm.

UNITED PROVINCES: Khairabenda, Khash Forest, 29. xi. 1913 (C. F. C. Beeson).

This species can be readily distinguished from both *P. sundewalli* and *P. angulicollis* by its short rostrum and hind femora, and its broad forehead. Found in burrows in dead sal-tree (*Shorea robusta*). Mr. Beeson informs me that all the three species of *Phænomerus* mentioned here occurred in burrows of Scolytidæ &c., and he is of opinion that they are predaceous upon those beetles.

XIV.—*A Revision of the Clupeid Fishes of the Genus Pellonula and of Related Genera in the Rivers of Africa.* By C. TATE REGAN, M.A.

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*PELLONULA* and its allies are distinguished from *Clupea*, *Sardinella*, &c., by the stronger dentition and by the absence of the anterior supramaxillary bone.

*Synopsis of the Genera.*

- I. Abdominal scutes sharply keeled; præmaxillary teeth rather strong.
  - A. Lower jaw not or but little projecting; anterior mandibular teeth enlarged, but no strong canines in either jaw.
    1. D. 16-18, above or just behind pelvis. A. 16-21. Scales about 45/11-15. Vertebrae 42-43. Supramaxillary large.
      1. *Pellonula*.
    2. D. 12-14, above interspace between pelvis and anal.
      2. *Pecillothrissa*.
    3. D. 13-14, above pelvis. A. 17-18, far behind dorsal. Scales 40-44/10. Vertebrae 42. Supramaxillary small.
      3. *Microthrissa*.
      4. *Potamothrissa*.
  - B. Lower jaw strongly projecting.
    - Præmaxillaries with an inner series of 2 or 3 strong canine-like teeth on each side; anterior teeth of lower jaw enlarged.
      5. *Cynothrissa*.
    - Præmaxillary teeth uniserial, with a canine on each side; lower jaw with a pair of strong anterior canines.
      6. *Odaothrissa*.
- II. Abdominal scutes in front of pelvic fins feebly keeled; præmaxillary teeth small.
  - Maxillary narrow proximally and expanded distally; tongue and palate toothless.
    7. *Stolothrissa*.
  - Maxillary broad throughout its length; a patch of teeth on each palatine and a strip on tongue.
    8. *Limnothrissa*.

1. *PELLONULA*, Günth. 1868.

Cat. Fish. vii. p. 462.

Form elongate, compressed; abdomen sharp-edged. Mouth moderate, terminal, with the lower jaw a little projecting; upper jaw without median notch; maxillary of a narrow proximal and an expanded distal part; in front of the narrow part a ligament runs from the end of the præmaxillary to the broad part of the maxillary; a single well-developed supra-maxillary. Teeth in jaws uniserial, conical, acute; præmaxillary teeth rather strong, unequal, without well-marked canines; mandibular teeth enlarged anteriorly; maxillary teeth minute; a patch of conical teeth on each palatine; an elongate patch of small teeth on tongue. 6 branchiostegals. Scales with entire edges, moderate, in a longitudinal series one to each myotome; ventral scutes sharply keeled and acutely pointed, commencing on or behind the thoracic keel formed by the hypocoracoids. Dorsal of 16-18 rays, anal of 16-21. Pelvis 8-rayed, below or a little in advance of dorsal. Vertebrae 42 or 43. A bluish-silvery lateral band.

*Pellonula modesta*, Fischer (Jahrb. Hamb. Wiss. Anst. ii. 1885, p. 75), from Eloby, is placed by Boulenger in the synonymy of *P. vorax*, but unless the description is quite incorrect (teeth in jaws minute, tongue and palate toothless, no lateral band, &c.) it is not a *Pellonula* at all, and is most likely a *Sardinella*.

A species from the coast of Brazil, described by Steindachner as *Pellonula labiensis* (Sitzungsb. Akad. Wien, lxxx. 1, 1880, p. 181, pl. iii, fig. 2), of which *Sardinella peruvia-bucana*, Schreiner & Ribeiro (Arch. Mus. Rio Janeiro, xii. 1903, p. 72), appears to be a synonym, evidently belongs to the genus *Heringia*, Fowler, 1911 (*Hin-sardinia*, Eigenmann, 1912), the type of which is *H. amazonica*, Steind., from the Amazon and Guiana.

#### Synopsis of the Species.

26-30 gill-rakers on lower part of anterior arch. Depth 3 to 4 in the length; caudal peduncle as long as deep	1. <i>vorax</i> .
27 gill-rakers on lower part of anterior arch. Depth 5 in the length; caudal peduncle a little longer than deep	2. <i>iconensis</i> .
33 gill-rakers on lower part of anterior arch. Depth 4 in the length; caudal peduncle $1\frac{1}{2}$ as long as deep	3. <i>stanleyana</i> .

#### 1. *Pellonula vorax*.

*Pellonula vorax*, Günth. Cat. Fish. vii. p. 452 (1858).

*Pellonula vorax* (part.), Bouleng. Cat. Afr. Fish. i. p. 156, fig. 124 (1909).

Depth of body 3 to 4 in the length, length of head  $3\frac{1}{2}$  to 4. Snout nearly equal to diameter of eye, which is 3 to  $3\frac{1}{2}$  in length of head; maxillary extending to below anterior margin or anterior part of eye; lower jaw a little projecting. 26 to 30 gill-rakers on lower part of anterior arch. About 45 scales in a longitudinal series, 14 in a transverse series; ventral scales 13-15+8-10. Dorsal 16-18; origin equidistant from end of snout and base of caudal, or nearer snout. Anal 18-21. Pelvics varying somewhat in position, rarely entirely below the dorsal, sometimes entirely in advance of it. Caudal peduncle as long as deep. Vertebrae 42.

West Africa, from the Senegal to Angola.

Numerous examples, measuring up to 140 mm. in total length.

This species may occur in the Lower Congo, but none of the specimens from the Congo enumerated by Boulenger belongs to it; I refer specimens 18 and 19 to *Cynothrissa*

*ansor*, iii, 20-23 and 24-25 to *Microthrissa parva*, 26 to *Potamothrissa acutirostris*, 27 and 28 to *Pacilothrissa congica*, and 29 and 30 to *Pellonula stanleyana*.

## 2. *Pellonula leonensis*.

*Pellonula leonensis*, Bouleng. Cat. Afr. Fish. iv. p. 172, fig. 111 (1916).

Depth of body 5 to  $5\frac{1}{2}$  in the length, length of head  $3\frac{3}{4}$  to 4. Snout nearly as long as diameter of eye, which is 3 in length of head; maxillary extending to below anterior  $\frac{1}{4}$  of eye; lower jaw a little projecting. 27\* gill-rakers on lower part of anterior arch. 45 scales in a longitudinal series, 11 or 12 in a transverse series; ventral scutes 13-14+8-9. Dorsal 16; origin equidistant from end of snout and base of caudal. Anal 16-17. Pelvies below origin or anterior rays of dorsal. Caudal peduncle a little longer than deep.

Sierra Leone.

Two specimens, 57 mm. long, from the North Sherbo District.

## 3. *Pellonula stanleyana*, sp. n.

*Pellonula vorax* (part.), Bouleng. Cat. Afr. Fish. i. p. 156 (1909).

Depth of body 4 in the length, length of head  $4\frac{1}{4}$ . Snout as long as diameter of eye, which is  $3\frac{1}{2}$  in length of head; maxillary extending to below anterior margin of eye; lower jaw a little projecting. 33 gill-rakers on lower part of anterior arch. 45 scales in a longitudinal series, 14 in a transverse series; ventral scutes 14+9. Dorsal 16-17; origin nearer to end of snout than to base of caudal. Anal 18. Pelvies below anterior rays of dorsal. Caudal peduncle  $\frac{1}{2}$  as long as deep. Vertebrae 43.

Stanley Falls.

Two specimens, 110 mm. in total length; one of these is a skeleton, but I have been able to count the gill-rakers.

## 2. *PACILOTHRIS*, gen. nov.

Closely related to *Pellonula*, differing in that the scales in a longitudinal series are less numerous than the myotomes, the supramaxillary bone is rather small, and the tongue is toothless. Dorsal fin of 13 rays, above the interspace between pelvies and anal, the last with 20-21 rays. Scales  $37\frac{1}{8}$ . Vertebrae 43.

\* I find 27 gill-rakers on the lower part of the anterior arch in each of the type-specimens, which I have examined under a binocular microscope.



*Pæcillothrissa congica*, sp. n.*Pellonula vorax* (part.), Bouleng. Cat. Afr. Fish. i. p. 156 (1909).

Depth of body 4 in the length, length of head  $4\frac{1}{4}$ . Snout a little shorter than diameter of eye, which is  $2\frac{3}{4}$  in length of head; jaws equal anteriorly; maxillary extending to vertical from anterior edge of eye; maxillary teeth quite distinct; 19 gill-rakers on lower part of anterior arch. 33 scales in a longitudinal series, 8 in a transverse series; ventral scutes 11-12+9-10. Dorsal 13; origin equidistant from end of snout and base of caudal. Anal 20-21. Pelvics well in advance of dorsal. Caudal peduncle longer than deep. Lateral band narrow, present only on posterior half of fish. Vertebrae 43.

Congo.

Two specimens, 55 and 60 mm. in total length, from Coquilhatville and from Mousembe.

3. *MICROTHRIS*, Bouleng. 1902.

Ann. Mus. Congo, Zool. ii. p. 26.

Scarcely generically distinct from *Pellonula*, but tongue toothless, dorsal fin of 12-14 rays and anal of 21 to 25, and pelvics in advance of dorsal. Scales 38-42/10-12. Vertebrae 39-40.

1. *Microthrissa parva*, sp. n.*Pellonula vorax* (part.), Bouleng. Cat. Afr. Fish. i. p. 156 (1909).

Depth of body 4 to 5 in the length, length of head about 4. Snout a little shorter than diameter of eye, which is rather more than  $\frac{1}{2}$  the length of head; maxillary extending to vertical from anterior edge of eye; lower jaw a little projecting. 26 or 27 gill-rakers on lower part of anterior arch. 40 to 42 scales in a longitudinal series, 10 or 11 in a transverse series; ventral scutes 12-13+7-8. Dorsal 12-14; origin nearly equidistant from end of snout and base of caudal. Anal 21-23, not extending forward to below dorsal. Pelvics in advance of dorsal. Caudal peduncle longer than deep. 40 vertebrae.

Upper Congo.

Two specimens of 40 mm. from Coquilhatville and three of 30 mm. from the Tumba Lake.

2. *Microthrissa royauxi*.

*Microthrissa royauxi*, Bouleng. Ann. Mus. Congo, ii. 1902, p. 26, and Cat. Afr. Fish. i. p. 161, fig. 129 (1909).

Depth of body  $3-3\frac{1}{2}$  in the length, length of head 4. Snout shorter than diameter of eye, which is 3 in length of head; jaws equal anteriorly; maxillary with minute teeth, extending to below anterior margin of eye; 14 gill-rakers on lower part of anterior arch. 38 to 40 scales in a longitudinal series, 12 in a transverse series; ventral scutes 12-13 + 6-7. Dorsal 13; origin equidistant from end of snout and base of caudal, behind the 8-rayed pelvics. Anal 23 (-25), extending forward nearly to below end of dorsal. Caudal peduncle a little deeper than long. 39 vertebrae.

Ubanghi R.

One of the types, 55 mm. in total length, from Banzyville.

4. POTAMOTHRISSE, gen. nov.

Closely related to *Pellonula*, but maxillary narrow, supra-maxillary bone quite small, and no teeth on tongue or on maxillary. Dorsal fin of 13 or 14 rays, placed well forward, its origin much nearer to end of snout than to base of caudal, above or in advance of first ray of pelvics; anal of 17 or 18 rays, far behind dorsal. Scales 40-44/10. Vertebrae 42.

1. *Potamothrissa obtusirostris*. (Fig. 1, 2.)

*Pellonula obtusirostris*, Bouleng. Cat. Afr. Fish. i. p. 158, fig. 126 (1909).

Jaws equal anteriorly. 16 gill-rakers on lower part of anterior arch. Ventral scutes 9-10 + 9-10.

Aruwimi River, Congo.

Two specimens, 72 mm. in total length.

2. *Potamothrissa acutirostris*.

*Pellonula acutirostris*, Bouleng. Cat. Afr. Fish. i. p. 159, fig. 127 (1909).

Lower jaw shorter than upper. 19 gill-rakers on lower part of anterior arch. Ventral scutes 12-13 + 10-12.

Upper Congo.

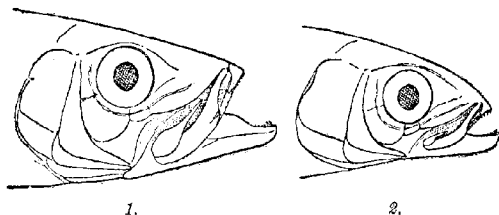
Five specimens, up to 75 mm. in total length.

5. CYNOTHRISSE, gen. nov.

Differs from *Pellonula* in the very prominent lower jaw and in the presence of an inner series of premaxillary teeth,

comprising 2 or 3 strongly enlarged teeth on each side.  
Vertebrae 42.

Fig. 1.



Heads of 1. *Cynothrissa mento*, 2. *Potamothrissa obtusirostris* ( $\times 2\frac{1}{2}$ ).

1. *Cynothrissa mento*, sp. n. (Fig. 1, 1.)

*Pellonula vorax* (part.), Bouleng. Cat. Afr. Fish. i. p. 156.

Depth of body 4 in the length, length of head (without lower jaw)  $3\frac{3}{4}$ . Snout longer than diameter of eye, which is  $3\frac{3}{4}$  in length of head; maxillary extending to below anterior  $\frac{1}{2}$  of eye. 19 gill-rakers on lower part of anterior arch. About 45 scales in a longitudinal series, 14 in a transverse series; ventral scutes 15+9. Dorsal 17; origin above base of pelvics, equidistant from end of snout and base of caudal. Anal 21. Caudal peduncle longer than deep.

Nigeria.

A single specimen, 130 mm. in total length, from Agberi, Southern Nigeria.

This new species is distinguished from *C. ansorgii* by the more slender form, fewer gill-rakers, and more numerous anal rays.

2. *Cynothrissa ansorgii*.

*Pellonula vorax* (part.), Bouleng. Cat. Afr. Fish. i. p. 156 (1969).

*Odocoethrissa ansorgii*, Boulenger, *op. cit.* iv. p. 172, fig. 112 (1916).

Depth of body 3 to  $3\frac{1}{2}$  in the length, length of head (without lower jaw)  $3\frac{2}{3}$  to 4. Snout as long as or longer than diameter of eye, which is 3 to 4 in length of head; maxillary extending to below anterior  $\frac{1}{2}$  or middle of eye. 23 to 25 gill-rakers on lower part of anterior arch. 42 to 45 scales in a longitudinal series, 14 or 15 in a transverse series; ventral scutes 13-16+9-11. Dorsal 15-17; origin

above or immediately behind base of pelvics, nearly equidistant from base of caudal and end of snout. Anal 17-19. Caudal peduncle as long as deep. Vertebrae 42.

Lower Congo and Angola.

Nine specimens, 110 to 160 mm. long, including the types from Angola and two from Boma and from Vivi, Lower Congo.

#### 6. *ODAXOTHRISSA*, Bouleng. 1899.

Differs from *Pellonula* in the very prominent lower jaw, with a pair of strong canines anteriorly; premaxillary teeth uniserial, with a canine on each side.

##### 1. *Odxathrissa vittata*, sp. n.

*Odxathrissa losera* (part.), Bouleng. Cat. Afr. Fish. i. p. 160 (1900).

Depth of body  $4\frac{1}{4}$  in the length, length of head  $3\frac{2}{3}$ . Snout longer than diameter of eye, which is 4 in length of head; maxillary extending to below middle of eye; canines very strong. Gill-rakers shorter than gill-filaments, 22 or 23 on lower part of anterior arch. 45 scales in a longitudinal series, 14 in a transverse series; ventral scutes 12+9. Dorsal 16; origin a little nearer base of caudal than end of snout, immediately behind base of pelvics. Anal 21. Caudal peduncle  $1\frac{1}{2}$  as long as deep. A well-defined silvery lateral band.

Ubanghi River.

A single specimen, 110 mm. long, from Banzyville.

##### 2. *Odxathrissa losera*.

*Odxathrissa losera*, Bouleng. Ann. Mus. Congo, Zool. i. 1899, p. 64, pl. xxxi. fig. 1.

Depth of body equal to or a little less than length of head, which is  $3\frac{1}{2}$  in the length of fish. Snout a little longer than diameter of eye, which is  $3\frac{2}{3}$  to  $4\frac{1}{2}$  in length of head; maxillary extending to below anterior  $\frac{1}{2}$  or middle of eye. 27 gill-rakers on lower part of anterior arch. 44 to 46 scales in a longitudinal, 14 in a transverse series; ventral scutes 11+9. Dorsal 16-17; origin equidistant from end of snout and base of caudal, immediately behind base of pelvics. Anal 21-22. Caudal peduncle as long as deep. Lateral band vestigial.

Upper Congo.

The above description is based on one of the types, a specimen of 85 mm. from Coquilhatville, and on the figure of the larger type-specimen, 160 mm. long. In the smaller fish the gill-rakers are rather longer than the gill-filaments, but in the larger they are said to be much shorter and to number only 18 on the lower part of the anterior arch; this may be a misprint for 28, or possibly in the adult the anterior gill-rakers may be vestigial.

#### 7. *STOLOTHRISSA*, gen. nov.

Mouth formed as in *Pellonula*, but teeth in jaws quite small and no teeth on palate or tongue. Abdomen in front of pelvic fins rounded, with the scutes but weakly keeled; scutes behind pelvic fins strongly keeled and acutely pointed. Vertebrae 44.

*Stolothrissa tanganica*, sp. n. (Fig. 2, 2.)

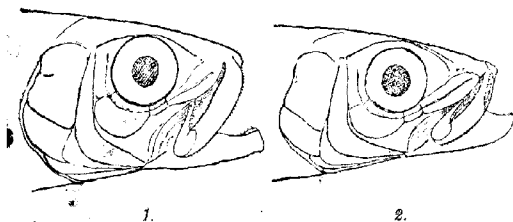
*Pellonula miodon* (part.), Bouleng. Cat. Afr. Fish. i. p. 157 (1909).

Depth of body about 6 in the length, length of head  $3\frac{1}{2}$  to 4. Snout rather longer than diameter of eye, which is  $3\frac{1}{2}$  in length of head; maxillary not or barely reaching vertical from anterior margin of eye; lower jaw slightly projecting. 40 to 42 gill-rakers on lower part of anterior arch. About 45 scales in a longitudinal and 13 in a transverse series; ventral scutes 13-14+8-9. Dorsal 15; origin nearly equidistant from end of snout and base of caudal. Anal 17. Pelvics below or a little in advance of middle of dorsal. Lateral band broad.

Tanganyika.

Four specimens, 80 to 95 mm. in total length, from Vua and Ndanvie.

Fig. 2.



Heads of 1. *Limnothrissa miodon*, 2. *Stolothrissa tanganica* ( $\times 2$ ).

## 8. LIMNOTHRISSA, gen. nov.

Maxillary broad throughout its length, its dentigerous margin extending right up to the præmaxillary; latter with quite small teeth, but dentition of lower jaw, palatines, and tongue as in *Pellonula*. Abdomen in front of pelvic fins rounded, with scutes but weakly keeled; scutes behind pelvic fins strongly keeled and acutely pointed. Vertebrae 44.

*Limnothrissa miodon*. (Fig. 2, 1.)

*Pellonula miodon* (part.), Bouleng. Cat. Afr. Fish. i. p. 157, fig. 125 (1900).

Depth of body  $4\frac{1}{2}$  in the length, length of head  $3\frac{2}{3}$  to 4. Snout as long as diameter of eye, which is  $3\frac{1}{3}$  in length of head; maxillary extending to below anterior  $\frac{1}{4}$  of eye; lower jaw slightly projecting. 31 to 33 gill-rakers on lower part of anterior arch. About 45 scales in a longitudinal and 14 in a transverse series; ventral scutes 13-14+10-11. Dorsal 15; origin equidistant from end of snout and base of caudal. Anal 16-18. Pelvics below middle or anterior part of dorsal. Lateral band broad.

Tanganyika.

Four specimens, 100 to 140 mm. in total length, from Ndanvie, Tembwi, and Kasakalewa; also some young examples not included in the description.

XV.—*New Species of Tabanidæ from Australia and the Fiji Islands.* By GERTRUDE RICARDO.

THE identification of species and descriptions of new species contained in this paper are from specimens forwarded to Mr. Marshall by Dr. E. W. Ferguson and Dr. J. Burton Cleland.

One new species from the Fiji Islands, the type being in the British Museum Coll., is included. The types of all the new species will be presented to the British Museum by the Imperial Institute of Economic Entomology, with the exception of a few species belonging to the South Australian Museum and the National Museum, Victoria; in these cases, paratypes are kept for the British Museum.

## PANGONINE.

*Diatomineura ruficornis*, Macquart, Dipt. Exot., Suppl. i.  
p. 25 (1846); Walker, List Dipt. pt. v., Suppl.  
i. p. 142 (1854); Ricardo, Ann. & Mag. Nat. Hist.  
(7) v. p. 113 (1900).

Females and males from the summit of Mt. Wellington, Tasmania.

I believe these specimens are Macquart's species, the type of which was examined by me at Lille in 1906, and the following note made of it:—"Palpi with the first joint short, the second long, flattened at base, broad, ending in a fine point. Subcallus fulvous, forehead darker. Thorax blackish, with yellowish tomentum; this describes it better than Macquart's remarks, the stripes he speaks of consist of pubescence, sides with yellow pubescence; the other details of his description are correct."

This species is very probably identical with *Diatomineura constans*, Walker, as suggested by Mr. White.

*Diatomineura constans*, Walker, Dipt. Saund. i. p. 15 (1859);  
Ricardo, Ann. & Mag. Nat. Hist. (7) v. pp. 113, 118  
(1900); White, Royal Soc. Tasmania, 1915, pt. ii,  
Diptera Brachycera of Tasmania, p. 20.

Nine females from Waratah, Tasmania (*Lea*).

One female from Hobart (*Lea*).

*Diatomineura auriflua*, Donovan, Gen. Illustr. Ent. Hym. et  
Dipt. (1805) [*Tabanus*]; Wied. Aus-zweidl. Ins. i.  
p. 194 (1848) (*Pangonia*); Ricardo, Ann. & Mag. Nat.  
Hist. (7) v. pp. 112, 119 (1900); id. (8) xvi. p. 27  
(1915); White, Royal Soc. Tasmania (1915), pt. ii,  
Diptera Brachycera Tasmania, p. 19.

[*Pangonia solida*, Wlk.]

[*Pangonia dives*, Macq.]

One male and one female from Mt. Washington, Tasmania (*Lea*).

Two males and one female from Devonport, Tasmania (*Lea*).

*Diatomineura brevisrostris*, Macq. Dipt. Exot., Suppl. iv.  
p. 326 (1842); Ricardo, Ann. & Mag. Nat. Hist. (7) v.  
p. 113 (1900); id. (8) xvi. p. 29 (1915).

Two females from Dorrig, New South Wales (*W. Heron*).

Six females from Clarence River, New South Wales  
(A. & F. R. Zielz).

*Diatomineura testacea*, Macquart, Dipt. Exot. i. p. 103  
(1838); Walker, List Dipt. pt. v., Suppl. i. p. 145  
(1854); Ricardo, Ann. & Mag. Nat. Hist. (8) xvi. p. 31  
(1915).

One female from Cairns District, Queensland (Dodd).

*Diatomineura abdominalis*, ♀, sp. n.

Type (female) and another from Laurieton, New South Wales, 19. 10. 15.

A species nearly allied to *Diatomineura brevirostris*, but distinguished from it by the absence of any white or yellow haired spots on abdomen and by the first posterior cell being considerably narrowed at the border, only half open.

Length 15 mm.

*Face, palpi*, and *antennæ* as in *D. brevirostris*. *Forehead* parallel, also the same; the frontal callus when not denuded appears to be small, pear-shaped. *Thorax* dresden-brown with short black pubescence, no stripes are visible; shoulders with chiefly yellowish-white hairs continued on sides of thorax as far as the scutellum, but they do not quite reach the apex of scutellum; a faint white spot is visible on each side of thorax near the suture, on the dorsum. *Abdomen* amber-brown, mottled with blackish markings, smooth, shining, with very short black pubescence; sides with yellowish-white hairs; apex and sides of posterior segments paler in colour; underside paler with black spots. *Legs* reddish-yellow; the tarsi brownish, pubescence chiefly black. *Wings* clear, stigma yellowish, veins brown, no appendix; first posterior cell narrow at border, but open.

*Erephopsis maculipennis*, Macquart, Dipt. Exot., Suppl. iv. p. 20 (1849); Schiner, Reise Novara, Dipt. p. 99 (1868) [*Pangonia*]; Ricardo, Ann. & Mag. Nat. Hist. (7) v. p. 106 (1900); id. (8) xvi. p. 23 (1915).

A series of specimens from South Australia appear to be this species, judging from Macquart's description, though there are a few discrepancies; his type came from the East Coast of New South Wales.

The *wings* have an appendix and two brown spots, which, however, amount to little more than dark shading on the transverse veins. *Abdomen* black, at base testaceous, with



median black spots on the first two segments. *Antennae* red, *palpi* with the second joint a little longer than the first, which is blackish; the second one reddish, black at borders, concave and broad, ending in an obtuse point.

*Erephopsis lasiophthalma*, Boisduval, Voyage 'Astrolabe,' Zool. ii. p. 666 (1832) [*Pangonia*]; Macquart, Suites à Buffon, i. p. 193 (1834); Walker, List Dipt. Brit. Mus. v., Suppl. i. p. 139 (1854); Ricardo, Ann. & Mag. Nat. Hist. (7) v. p. 154 (1900).

The type was described from Cape Jervis, S. Australia. *Erephopsis contigua*, Wlk., is not identical as Walker stated. *Pangonia fuliginense*, Boisduval, is from New Guinea; whether it is the same as *Erephopsis lasiophthalma* is doubtful.

Three females from Mt. Kosciuszko in N.E. Victoria, and two females from Moonbar, New South Wales (*Macgraei*) (1915), in Brit. Mus. Coll., belong, I believe, to this species, answering to the description by Boisduval. Whether the specimens Macquart placed under this species are identical is doubtful.

The *wings* have one dark band crossing the base of the discal cell and the apices of the basal cells, and the transverse veins at fork of third vein and apex of discal cell are shaded; there is the rudiment of an appendix present; the first posterior cell is narrowed at border, but open. *Abdomen* reddish with a black median spot on the first three segments, then usually darker at the apex. *Antennae* reddish yellow. *Palpi* same colour, very short; the second joint not much longer than the first joint, very concave. *Forehead* twice as broad anteriorly as it is at the vertex, with dark furrows above, continued to the antennae. Walker's species has two very distinct dark bands on the wings. *E. macleayi* differs in the wings, which are only shaded, and the first joint of *palpi* is dark.

*Erephopsis guttata*, Donovan, Illust. Ent. i., Hym. et Dipt. (1806) [*Tabanus*].

One female from Queensland.

*Erephopsis gibbula*, Walker, List Dipt. i. p. 140 (1848); Ricardo, Ann. & Mag. Nat. Hist. (7) v. pp. 112, 117 (1900); id. (8) xvi. p. 22 (1915).

Five females from Warren River, West Australia.

*Erephopsis aureohirta*, Ricardo, Ann. & Mag. Nat. Hist. (7) v. pp. 112, 116, pl. i. fig. 10 (1900); id. (8) xvi. p. 23 (1913).

Two females from Queensland.

*Erephopsis doddi*, ♀, sp. n.

Type (female) and others from Warren River, West Australia (*W. D. Dodd*). The type is in the South Australian Museum.

A species with shaded transverse veins on the wings. Antennae testaceous at base with median black spots and blackish at apex and greyish or reddish segmentations. Antennae blackish. Palpi very small, short, and concave. Legs testaceous and blackish.

Length 15 mm.

*Face* reddish, with grey tomentum and long black hairs, some white ones intermixed. Beard yellowish white. *Palpi* testaceous, the first joint with long black hairs, the second one conical and concave with curved upper border, and a few short black hairs at apex. *Antennae* black, the first two joints with long black hairs. *Forehead* reddish brown with grey tomentose sides and with black thick pubescence, broadest anteriorly, being quite a third broader than at vertex; ocelli distinct. *Thorax* blackish with two narrow, grey, tomentose stripes on anterior half of dorsum only; pubescence as in *E. genina*, Walker. *Abdomen* very similar to this last species, the third segment with a black spot similar to the one on the second segment; hairs on sides chiefly white, black on the third, fourth and fifth segments; underside bright testaceous with a few white hairs. *Legs* testaceous, but blackish on the upper sides of femora; pubescence black. *Wings* with the first posterior cell closed or slightly open.

*Pelecorrhynchus cristatoides*, Walker, List Dipt. Brit. Mus. i. p. 193 (1848) [*Silcins*]; Ricardo, Ann. & Mag. Nat. Hist. (7) v. p. 102 (1900); White, Royal Soc. Tasmania (1915), pt. ii., Diptera Brachycera, p. 22.

One male from Huron River, Tasmania (*Lea*).

#### Genus *SILVUS*.

Mr. Taylor has lately forwarded me a copy of his paper (Proceedings Linnæan Soc. of New S. Wales, 1915, vol. xl.

pt. 4, Nov. 24th), containing eight new species of this genus, which, with the four new species named by me in the Ann. & Mag. Nat. Hist. (8) xvi, Oct. 1915, brings the known species occurring in Australia to twenty. Seven new species are now added, which are all distinct from those described by Mr. Taylor, judging from his descriptions.

*Silvius grandis*, ♀, sp. n.

Type (female) and another from Fortescue River, Hamersley Range, North-West Australia, and another in the Brit. Mus. Coll. from N. Australia (*J. R. Elsey*), 57.13.4—this latter in bad preservation. The type is in the South Australian Museum.

A large dark brown species; antennæ, palpi, and legs blackish. Abdomen with white-haired segmentations.

Length 15 mm.

Face blackish, covered with grey tomentum and with some white hairs. Palpi similar to those of a species of *Tabanus*; large, black, stout at base, ending in a point. Beard scanty, white. Antennæ black, the third joint wide at its base, the first two joints with black hairs. Eyes bare. Forehead narrow, and narrower anteriorly than at vertex; frontal callus narrow, pear-shaped, with long lineal extension; ocelli distinct; traces of golden-coloured pubescence on forehead. Thorax (denuded) blackish brown, some white hairs at sides and on shoulders. Abdomen blackish brown, the segmentations white-haired, the other female has the first and second segments partly yellowish brown; traces of grey tomentum appear on segments; pubescence on abdomen black; underside blackish, with white-haired segmentations. Legs blackish brown with black pubescence, the tibiae more reddish brown. Wings greyish, slightly tinged yellowish brown; veins and stigma yellowish; no appendix.

*Silvius fuscipennis*, ♀, sp. n.

Type (male) from Claudie River, Queensland (*T. A. R.*).

Type (female) from Cape York, N. Queensland (*Macgillivray*).

Three females from Claudie River and one female from Cape York.

The types are in the Nat. Museum, Victoria.

A species apparently belonging to this genus, to be recognized at once by the brown wings with one irregular clear band and two clear spots.

Length 13–16 mm.

*Female*.—Face covered with yellowish-grey tomentum and with a few white hairs. Beard white. Palpi fairly stout, reddish yellow or darker in colour. Antennæ blackish, the first two joints rather large with black hairs, the third broad at its base. Eyes bare. Forehead narrow, but a little wider anteriorly, the frontal callus black, club-shaped, with an extension not reaching the vertex; forehead blackish with yellowish-grey tomentum. Thorax and scutellum blackish brown. Abdomen broad, blackish with narrow reddish-yellow bands; underside the same, but more reddish brown. Legs blackish. Wings sepia, the pale irregular band crosses the bases of the first submarginal, the first posterior, the discal, the fourth and fifth posterior cells; there is a small clear spot at the base of the fork of the third longitudinal vein, and a larger one on the apex of the discal cell, embracing the base of the second and third posterior cells; stigma dark brown; wing at base somewhat pallid.

In the female from Claudie River the palpi are blackish, the abdomen on the first four segments is yellowish with a black spot in the centre of each segment, the remaining segments blackish with yellow segmentations; underside yellowish with broad whitish segmentations, darker at apex.

*Male* somewhat different from the female in the colouring of the abdomen, which has black spots in the centre of each of the first three segments, and the apical segments are entirely black; pubescence on the yellow parts yellow, black elsewhere; underside identical. Sides of thorax with bright reddish-yellow hairs, dorsum deep black. Scutellum the same, with black hairs. Wings paler brown than in the female.

*Silvius nigripennis*, ♀, sp. n.

Type (female) and another female from Claudie River, North Queensland (*J. A. Kershaw*), 11/12 and 2/13. One female from same place, 28.1.14.

The type is in the National Museum, Victoria.

A species rather *Tabanus*-like in appearance, and very similar to *Silvius grandis*, sp. n., in all particulars, except the wings; easily distinguished by its almost wholly brown wings and black abdomen with white bands.

Length, type,  $16\frac{1}{2}$  mm., the others 14 and 17 mm.

Face flat in centre, covered with grey tomentum and with white pubescence. Palpi black, rather stout on their whole length, ending in a short point. Antennæ black, broad at base of third joint, *Tabanus*-like in shape. Forehead slightly

broader anteriorly, about four times as long as it is broad, covered with grey tomentum; frontal callus brown, pear-shaped, with short lineal extension; pubescence scanty, white; ocelli distinct. *Thorax* blackish, covered with grey tomentum; pubescence black, with some appressed white hairs. *Scutellum* same colour. *Abdomen* black with black pubescence; bands of white hairs on posterior borders of the first four segments, not reaching the middle of segment; underside black with three complete white bands. *Legs* black with black pubescence. *Wings* dark brown, pale at the extreme apex, with a clear streak below the stigma, and the extreme edge of the posterior border of wing also pale.

*Silvius fergusoni*, ♀, sp. n. •

Type (female) from Nelson Island, Hawkesbury River, New South Wales, 26.2.16.

This handsome species, named after the donor, is nearly allied to *Silvius nigripennis*, sp. n., from the northern part of Australia; but is distinguished by the pale base of wing. These two species, together with *Silvius grandis*, sp. n., form a group unlike the typical forms by their larger size and dark abdomens marked with paler segmentations, and by their coloured wings.

This species measures 17 mm.

*Face* covered with light ashy-grey tomentum and with some silvery-white hairs in centre of face, and longer, more numerous ones in the furrows between the face and the cheeks, joining the beard of same colour. *Palpi* blackish, with some ashy-grey tomentum, and short dark hairs; they are large and stout with an obtuse point. *Antennae* black, the first two joints with black hairs, the third large and wide at the base with a distinct angle. Subcallus same colour as face. *Forehead* same colour, narrow, parallel, about six times as long as it is broad anteriorly; the frontal callus black, shining, not reaching the eyes, pear-shaped, with a long stout lineal extension reaching the ocelli. *Thorax* blackish brown, somewhat shining, with two grey tomentose stripes and grey at sides; pubescence chiefly black; some white hairs on the stripes; pubescence on shoulders long, black, with tufts of white hairs at base of wings. *Scutellum* the same colour. *Abdomen* blackish brown, the first two segments with broad grey tomentose bands, which are represented on the remaining segments only at the sides; these bands have white hairs, thickest at

the sides, pubescence elsewhere black; underside is identical, but the grey bands are present on every segment for their whole width. *Legs* black, the fore coxae with whitish tomentum and pubescence. *Wings* blackish brown, darkest on the fore border in the submarginal cells, becoming paler at apex and on posterior border, and almost clear in the basal, anal, and axillary cells; stigma blackish; veins brown.

It is distinguished from *Silcius nigripennis* by the pale base of wing, and by the shape of the frontal callus and forehead.

*Silcius niger*, ♀, sp. n.

Type (female) from Helensburgh, New South Wales, 9.3.15. Was resting on branch of low shrub; when disturbed it circled round my head, evidently seeking to bite (E. W. F.).

A small robust black species, with a broad abdomen and clear wings. Eyes slightly pubescent. Antennæ and palpi dull reddish yellow. Legs blackish.

Length 11 mm.

*Face* covered with brownish tomentum, paler on cheeks, and with some dark hairs in the centre; on the cheeks they are much thicker and long, increasing in length as they attain the bases of cheeks. Beard same colour. *Palpi* reddish yellow, curved on their upper edges, which are clothed with a distinct fringe of black hairs, the lower edges have a similar fringe; they are somewhat stout at base, ending in an obtuse point. *Antennæ* rather a darker shade than the palpi, the first two joints with black hairs, the third joint with a very few at the base and on the extreme tip; the tooth represented by an obtuse angle. *Forehead* same colour as face, with black pubescence, parallel; the frontal callus dark brown, very narrow, keel-like. *Ocelli* very distinct. *Thorax* sepia, with two broad grey tomentose stripes and grey sides; a few scattered white hairs on dorsum; long black hairs on the grey tomentose shoulders. *Scutellum* a little darker. *Abdomen* blackish, grey tomentum on the first segment; on the second, third, and fourth segments appear short white hairs on the sides and in the middle, not, however, joining each other to form a band; pubescence elsewhere black; segmentations with traces of grey tomentum; underside black with very narrow white-haired segmentations. *Legs* black; knees reddish yellow, the tibiae obscurely so; pubescence black. *Wings* clear, veins yellowish brown, stigma yellowish.

*Silvius montanus*, ♀, sp. n.

Type (female) and another from Mt. Tambourine, Queensland (*A. M. Lea*).

The type is in the South Australian Museum.

A blackish-brown species with yellowish segmentations on abdomen and traces of median yellow spots. Antennæ reddish yellow. Legs blackish brown, some of the tibiae yellowish.

Length 10 mm.

*Face* covered with greyish tomentum and with yellowish tomentum near the eyes; pubescence consists of long blackish hairs. Beard whitish. *Palpi* stout, covered with grey tomentum and with black pubescence, yellowish at extreme base. *Antennæ* with the first joint greyish, covered with black hairs, the second yellow with black hairs, the third reddish brown, apex black. *Forehead* broader anteriorly, covered with yellowish-brown tomentum, brown in the centre; the frontal callus elongate, apparently broader near the vertex; forehead covered with black hairs; ocelli distinct. *Eyes* bare. *Thorax* reddish brown with two grey stripes, most distinct anteriorly, covered with greyish-yellow hairs and with black pubescence intermixed, and longer black hairs at sides. *Scutellum* brown, with black hairs. *Abdomen* brown; the segmentations widely pale yellow, with white hairs, which form median spots; pubescence black; hairs at sides chiefly white; underside blackish, with white-haired bands. *Legs* blackish, the fore and mid tibiae obscurely yellowish, the hind tibiae reddish brown; pubescence on legs black. *Wings* greyish, the transverse veins shaded, the other ones faintly shaded; no appendix; stigma yellowish; veins brown.

*Silvius insularis*, ♀, sp. n.

Type (female) and another from Bathurst Island, N. Territory.

The type is in the South Australian Museum.

A small narrow blackish-brown species, with a greyish tomentose stripe on abdomen; legs pale yellow, the femora darker. *Palpi* long, narrow, with truncated tips.

Length 10 mm.

*Face* reddish, covered with grey tomentum, and with some short white hairs. *Palpi* yellowish, with black hairs. *Antennæ* yellowish, the first two joints with black hairs, the third wide at its base. *Forehead* almost parallel; frontal

callus blackish, quadrate, reaching the eyes, with a lineal extension, covered with grey tomentum. Ocelli distinct. *Thorax* and *scutellum* reddish brown, with white short pubescence and some grey tomentum anteriorly on thorax. *Abdomen* blackish brown, with a broad median stripe of grey tomentum and grey segmentations, and scattered white hairs on stripe and segmentations; underside dark, with grey segmentations. *Legs* with some brown colour on the femora and on apices of tibiae and tarsi; pubescence white, with some black on tibiae and tarsi. *Wings* clear, veins yellowish.

*Silvius indistinctus*, Ricardo, Ann. & Mag. Nat. Hist. (8) xvi. p. 262 (1915).

Two females from Melville Island, N. Australia (*W. D. Dodd*).

Five females from Bathurst Island, Northern Territory.

One female from Coen River, Cape York Peninsula, N. Australia (*W. D. Dodd*).

*Ectenopsis australis*, ♂ ♀, sp. n.

Male (type) from Milson Island, Hawkesbury River. This type is not in the Brit. Mus. Coll.

Female (type) from Sydney (*C. Gibbons*), 16. 12. 14.

A species nearly allied to *Ectenopsis vulpecula*, Wied., but distinguished from it by the very distinct stripes on thorax and by the darker, not uniform, colour of abdomen and of the face. The legs, which, however, appear to be variable in colouring in the typical species, are here reddish yellow; the tarsi dusky.

*Female*.—*Face* and *forehead* chamois-coloured, with some grey tomentum. *Antennae* with the first two joints pale reddish yellow with black hairs, the third joint with the first division raw-sienna in colour, the next two divisions dusky with grey tomentum, and the remainder blackish. *Thorax* covered with yellowish-grey tomentum, with a narrow median brown mahogany stripe, becoming broader beyond the suture, and a broad one of the same colour at each side. *Scutellum* uniform brown mahogany-colour. *Abdomen* the same colour, with paler grey tomentose segmentations, developing on the second, third, and fourth segments into triangular median spots; underside almost a uniform paler shade. Appendix of wing long.

The *male* is similar, but the triangular median pale spots



of abdomen are absent. *Legs* duskier. The following note on the eyes of the male is furnished by the collector:—"Eyes brilliant green, with reddish-brown lines across at lower third; lines sharply defined below, fading above; similar line round whole eye. Eyes appear reddish brown in some lights."

#### TABANUS.

##### Group IV.

*Tabanus angusticaltus*, ♀, sp. n.

Type (female) and another from Melville Island, N. Australia (*W. D. Dodd*). The type is in the South Australian Museum.

A small greyish-brown species, which may be included in Group IV., as the frontal callus is only represented by a very small black line. Antennæ and legs reddish yellow.

Length  $7\frac{1}{2}$  mm. (type) : the other female  $9\frac{1}{2}$  mm.

*Face* and *forehead* covered with yellowish-grey tomentum; pubescence on face consists of a few white hairs and longer brown hairs below and on cheeks. *Palpi* long and narrow, hardly incrassate at base, yellow, with short black pubescence. Beard consists of white hairs below and brown above. *Antennæ* bright red-yellow, the two first joints pale yellow with black hairs, the third joint very broad at base, with a few black hairs at angle. *Forehead* parallel, about five times as long as it is broad, with some black pubescence. *Eyes* bare. *Thorax*, *scutellum*, and *abdomen* the same colour, blackish brown, with grey tomentum, and with short black pubescence; a few yellowish hairs at base of thorax, segmentations of abdomen narrowly pale; underside with wider yellow segmentations and white pubescence. *Legs* yellow, with black pubescence. *Wings* clear, grey; veins and stigma very pale yellow; long appendix present.

*Tabanus nemotuberculatus*, Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 388 (1915).

Three females from Cape York.

One female from Claudie River, N. Queensland.

*Tabanus nemopunctatus*, Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 388 (1915).

A series of females from Yellanna, S. Australia, appear

to belong to this species, though the type came from Queensland. These females have a broader forehead, wider anteriorly, whereas in the type it is parallel.

## Group VII.

*Tabanus strangmanni*, ♂, Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 393 (1914).

One male from Cairns District (W. D. Dodd).

*Tabanus rufinotatus*, Bigot, Mém. Soc. Zool. de France, v. p. 673 (1892) (*Atylotus*); Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 392 (1914).

A series of females from Melville Island, N. Territory.

*Tabanus pseudoardens*, Taylor, Austr. Inst. Trop. Med. 1911, p. 66, pl. xiv. fig. 18 (1913); Austen, Ann. & Mag. Nat. Hist. (8) xiii. p. 265 (1914); Ricardo, *ibid.* (8) xiv. p. 272 (1915).

A series of females from Cairns District, Queensland.

## Group VIII.

*Tabanus victoriensis*, Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 275 (1915).

Females from Mt. Tambourine, S. Queensland.

## Group IX.

*Tabanus macquarti*, Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 277 (1915). [*Tabanus umbellinervis*, Macq. Dipt. Exot., Suppl. iv. p. 333 (1852).]

A series of females from Cairns District, Queensland.

*Tabanus neogermanicus*, Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 283 (1915).

A series of females from Melville Island, S. Queensland.

*Tabanus clavicollis*, ♀, sp. n.

Type (female) from Milson Island, New South Wales, 10.1.15; other females from the same locality, and one female from Sydney. ("Eyes of a dull brown colour when alive": note by collector.)

The type is in the South Australian Museum.

A small species allied to *Tabanus neogermanicus*, Ricardo, but differing in the darker colour of the abdomen, and in the shape of the frontal callus which is rather distinctive for this species.

Length 11–12 mm.

Face covered with yellowish-grey tomentum, almost devoid of pubescence. Beard composed of sparse white hairs. Palpi long and slender, pale yellow, a little stouter on the basal half, ending in a long point; pubescence on the first long, white, on the second joint short and black. Antennæ bright reddish yellow, dusky at the tips, the first two joints with black pubescence, the third not very wide at its base, with a slight tooth. Forehead and subcallus darker than the face, the latter often appearing reddish through the tomentum; the forehead with black short hairs beyond the frontal callus, which is blackish brown, not reaching the eyes; large and club-shaped, ending in a very short point, which is, however, drawn out on some of the specimens; the whole callus is long, often attaining half the length of the forehead, which is about four times as long as it is broad and is the same width throughout. Thorax blackish, covered with yellowish-grey tomentum and with appressed pale fulvous hairs; pubescence on the reddish shoulders black, some white hairs at sides at base of wings. Scutellum identical. Abdomen blackish brown; posterior halves of the segments with greyish tomentose bands, extending in the middle as indistinct median spots, most discernible on the second to the fifth segments; some very short white pubescence is present on the segmentations and is longer at the sides. Legs blackish; the femora with some grey tomentum, and at their apices reddish yellow, or almost wholly so; the tibiæ reddish yellow, dusky at their apices. Wings clear, stigma yellowish brown, veins brown; a short appendix present.

Dr. Ferguson states that this is a common species.

*Tabanus milsonis*, ♀, sp. n.

Type (female) and another from Milson Island, New South Wales. ("Occurs on the cattle, but is rare and hard to catch": note by collector.)

A medium-sized species, blackish brown, with yellow palpi and blackish antennæ. Legs dusky in colouring. Abdomen with grey tomentose bands and spots. Wings with an appendix.

Length 16 mm.

Face covered with pale tomentum and some white short hairs. Beard white. *Palpi* pale yellow, swollen on their basal half, ending in a point which is about equal in length to the basal half, some grey tomentum on this latter; pubescence black, white below. *Antennæ* blackish, the first two joints reddish, the third joint broad at its base. *Forehead* parallel, about five times as long as it is broad; the frontal callus chestnut-coloured, oblong, not reaching the eyes, with a lineal extension; forehead darker than face, with black hairs. *Thorax* blackish brown, with two narrow grey tomentose stripes and grey at the sides. *Scutellum* identical. *Abdomen* blackish brown with broad grey tomentose bands, extending into blunt triangular spots in the middle; the ground-colour under the tomentum often appears reddish, and the sides are reddish yellow; pubescence on segmentations white, and on sides, elsewhere black mixed with the white at sides, and rather long and abundant at sides; underside reddish brown with grey tomentum. *Legs* dusky in appearance, the femora with grey tomentum, the tibiæ obscurely reddish; pubescence chiefly black, some white hairs on the femora and long ones on their under sides. *Wings* large, clear; veins blackish brown, with an appendix; stigma yellowish.

#### Group X.

*Tabanus nigratarsis*, Taylor, Report Austr. Inst. Tropical Medicine, 1911, p. 18 (1913); Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 288 (1915).

Two females from Northern Territory.

*Tabanus sanguinarius*, Bigot, Mém. Soc. Zool. de France, v. p. 675 (1892) [*Atylotus*]; Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 287 (1915).

Series of females from Mt. Tambourine, S. Queensland.

*Tabanus kershawi*, ♀, sp. n.

Type (female) and another from Claidie River, N. Queensland (*J. A. Kershaw*), 11/12 and 13.2.14.

The type is in the National Museum, Victoria.

A small black species, at once distinguished by the pale tibiæ and the reddish-yellow antennæ.

Length 10 mm.

Face black, with some brown tomentum and black hairs. Palpi blackish, very stout, ending in a very short point; pubescence black. Beard black. Antennae reddish yellow, with a very small angle on the third joint; some black hairs on the first two joints. Subcallus shining black. Forehead a third narrower anteriorly, about eight times as long as it is broad anteriorly, covered with grey and brown tomentum; frontal callus small, oblong, reaching the eyes, with a lineal extension. Eyes bare, with traces of three stripes. Thorax, scutellum, and abdomen blackish with some few appressed grey hairs on thorax and scutellum, and on segmentations of abdomen; pubescence at sides black. Legs black, the fore tibiae whitish, darker at extreme apex, the middle tibiae and the hind pair wholly whitish; fore tarsi black, the others almost wholly whitish. Wings clear, veins and stigma yellow; no appendix.

#### Group XI.

##### Subgenus *THYRIOPLECTES*.

Species with pubescence on the eyes.

*Tabanus regis georgii*, Macquart, Dipt. Exot. i. n. 132 (1838); Ricardo, Ann. & Mag. Nat. Hist. (8) xvi. p. 276 (1915).

One female from S. Australia (*Rev. A. P. Burgess*, ("Eyes in this species are dull-coloured": note by the collector.)

*Tabanus circumdatus*, Walker, List Dipt. i. p. 185 (1848); Ricardo, Ann. & Mag. Nat. Hist. (8) xiv. p. 289 (1915); White, Royal Soc. Tasmania, 1915, pt. ii. p. 14.

(*Tabanus nepos*, Wlk.; *abstersus*, Wlk.; *brevidentatus*, Macq.; and *hebes*, Wlk., are all synonyms of this species.)

A series of females from Yeelanna, S. Australia, and from Swansea, Tasmania.

*Tabanus cirrus*, ♀, sp. n.

Female (type) from Milson Island, Hawkesbury River, New South Wales.

A stout, medium-sized, black species, distinguished by the

tufts of white hairs on the thorax at base of wing and by the white-haired fringe of scutellum.

Length 15 mm.

Face covered with ashy-grey tomentum and in the centre with long, fairly dense, white hairs. Beard white. *Palpi* yellowish with grey tomentum, stout at base, ending in a rather short point; the pubescence scanty, chiefly pale. *Antennae* dusky, the first two joints with black hairs. *Eyes* very distinctly pubescent. *Forehead* broad, about three times as long as it is broad anteriorly, where it is distinctly wider than at vertex; forehead and subcallus a little darker than face; frontal callus bare, protuberant, almost reaching the eyes, pear-shaped, with a short lineal extension, pitchy-brown in colour; pubescence on forehead black. *Thorax* blackish brown, with two grey tomentose stripes and another on each side below the suture; shoulders reddish with black hairs; a tuft of white hairs below base of wings, and another continued to the scutellum; pubescence on dorsum black. *Scutellum* blackish brown, fringed with white hairs on its posterior border. *Abdomen* blackish brown, with broad greyish-white tomentose segmentations and traces of white hairs on them, which are distinct on the side edges of the segments; pubescence elsewhere on dorsum black. *Legs* black, the fore coxae covered with ashy-grey tomentum and with white hairs; the tibiae reddish yellow, black at their apices; femora and tibiae with chiefly white pubescence. *Wings* clear, veins blackish; an appendix present; stigma brownish.

*Tabanus neocirrus*, ♀, sp. n.

Type (female) from Swansea, Tasmania (Lea), and another female from S. Australia.

The type is in the South Australian Museum.

A black species with whitish spots and segmentations on the abdomen; smaller than *Tabanus cirrus*, sp. n.

Length, type, 12 mm.; the other female 10 mm.

It differs from *Tabanus cirrus* in the following particulars:—*Palpi* slender, the long point nearly as long as the slightly incrassate basal part, covered with white pubescence. Third joint of *antennae* broad at base. Pubescence on thorax black with many white hairs, which are long anteriorly and shorter posteriorly. *Abdomen* with a distinct stripe composed of white-haired median spots; segmentations also white-haired, thickest at the sides.

*Tabanus postponens*, Walker, List Dipt. i. p. 179 (1848);  
Ricardo, Ann. & Mag. Nat. Hist. (8) xvi. p. 282  
(1915).

Males and females from South Australia.  
The femora are sometimes dark.

*Tabanus pacificus*, ♀, sp. n.

Type (female) and another female from Suva, Fiji Islands,  
30. vi. 1910 and xii. 1910 (*Dr. P. H. Bahr*). Presented by  
London School Tropical Medicine.

For list of species from these islands and surrounding  
region, see Ricardo, Ann. & Mag. Nat. Hist. (8) xiii. p. 476  
(1914).

A narrow-bodied dull-coloured species: palpi slender,  
blackish. Antennæ dull reddish yellow. Forehead narrow.  
Legs dull yellowish and brown.

Length 12 mm.

*Face* covered with tawny tomentum. Beard scanty,  
brownish. *Palpi* long and slender, almost the same width  
throughout; blackish with some greyish tomentum and a  
few black hairs. *Antennæ* tawny, the first two joints yellowish  
with black hairs, the third joint with a small but  
distinct tooth on its first division at base, clothed at tip  
with some black hairs; the next three divisions are equal  
in length, yellowish, the last one dusky and nearly as long  
as the three preceding ones together. Forehead narrow,  
slightly narrower anteriorly, about six times as long as it  
is broad anteriorly; frontal callus shining dark chestnut-  
brown, oblong, reaching the eyes, with a long, stout, lineal  
extension reaching nearly to the vertex. *Thorax* mummy-  
brown, with some traces of grey tomentum and some  
yellowish short hairs, but chiefly black ones, on the dorsum.  
*Scutellum* the same colour with black pubescence. *Abdomen*  
mummy-brown, appearing darker by reason of the rather  
thick, short, black pubescence; there are small, whitish,  
yellow-haired, median spots on each segment except the  
last two, and indistinct, narrow, grey segmentations, not  
visible on the apical segments, and almost absent on the  
other female; underside with white-haired segmentations  
and no spots. *Legs* mummy-brown, the femora yellowish,  
pubescence on legs black. *Wings* grey, faintly tinged brown  
on fore-border and on cross-veins; stigma and veins brown;  
appendix present, but very short.

XVI.—New Species of *Hæmatopota* from India.

By GERTRUDE RICARDO.

THESE species were handed to me for identification by the Imperial Bureau of Economic Entomology, the types to be given to the British Museum Collection.

*Hæmatopota montanus*, ♀, sp. n.

Type (female) and another from Bababuddin Hills, Mysore, 4700 ft., vi. 1915 (Ramakreshna Coll.).

A small species allied to *Hæmatopota latifascia*, Ricardo 'Records Indian Museum,' iv. p. 355, 1911), having one broad band extending across the apex of wing, but distinguished from it by the absence of a black band on the face.

Length of type 8 mm.; the other female 10 mm.

Face covered with grey tomentum and with small dark brown spots on the upper part, in the other female there is a trace of a black band on the lower edge; there is also a dark spot between the antennæ; hairs on face scanty, white. Palpi pale yellow with black hairs. Antennæ long and slender; the first joint as long as the first annulation of the third joint, only slightly incrassate, yellow with black pubescence; the second one very small, blackish; the third yellowish at base, then dusky; slender throughout. Forehead same colour as face; the frontal callus blackish brown, reaching the eyes, straight on both borders; the paired spots the same colour, touching the eyes, but not the band; some black pubescence on forehead. Thorax yellowish brown with appressed yellow hairs and some black ones; scutellum same colour with black hairs. Abdomen mummy-brown, with pale yellow segmentations and an obscure pale median stripe; pubescence black, some yellow hairs at apex; underside paler. Legs yellowish with blackish-brown rings; fore femora rather dusky and the others dusky at their apices; tibiae at base and apex blackish and a black ring in middle, the fore tibiae white at base, fore tarsi wholly black, on the other tarsi the basal joint is pale yellow; pubescence on dark parts black, on the pale parts white; fore tibiae incrassate. Wings with the usual rosettes; the apical band starts from the junction of the first vein with the border and attains the posterior border, it is rather sinuous on both borders; on the posterior border pale spots are present in every cell; veins and stigma brown.



Pelvis 8-rayed, inserted below origin of dorsal. Caudal peduncle longer than deep. Vertebrae probably not fewer than 46.

Stewart Island.

The type, from the Foveaux Straits, was 150 mm. long; the specimen in the British Museum measures 122 mm. in total length.

*Clupea muelleri*.

*Clupea muelleri*, Klunzinger, Sitzungsber. Akad. Wien, lxxx. 1880, p. 416.

An elongate patch of teeth on vomer, an ovate patch on tongue. Depth of body 3 to  $3\frac{1}{2}$  in the length, length of head  $3\frac{1}{3}$  to  $3\frac{2}{3}$ . Diameter of eye  $3\frac{1}{3}$  in length of head; maxillary extending to below anterior part or middle of eye; 36 to 39 gill-rakers on lower part of anterior arch. No radiating grooves at free margin of scales; 43 or 44 scales in a longitudinal series, 10 or 11 in a transverse series; ventral scutes strongly keeled and acutely pointed, 19-20+9-11. Dorsal 15-16; origin nearer to base of caudal than to end of snout. Anal 16-18. Pelvis 8-rayed, inserted below or a little in advance of origin of dorsal. Caudal peduncle deeper than long. Vertebrae 42.

New Zealand.

Five specimens, 90 to 100 mm. in total length, from Otago and Canterbury, received from the Otago and Canterbury Museums as examples of *C. antipodum*.

*Clupea arcuata*.

*Clupea arcuata*, Jenyns, Zool. 'Beagle,' Fish. p. 134 (1842); Günth. Cat. Fish. vii. p. 442.

A narrow strip of teeth on tongue; palate toothless. Depth of body 3 to  $3\frac{1}{2}$  in the length, length of head 4 to  $4\frac{1}{2}$ . Diameter of eye 3 to  $3\frac{1}{3}$  in length of head; maxillary extending to below anterior  $\frac{1}{3}$  of eye; 28 gill-rakers on lower part of anterior arch. No grooves at free margin of scales; about 42 scales in a longitudinal and 15 in a transverse series; ventral scutes strongly keeled and acutely pointed, 18-19+9-10. Dorsal 16-18; origin nearer to base of caudal than to end of snout. Anal 22-23. Pelvis 7-rayed, inserted below or a little in advance of origin of dorsal.

Uruguay to Northern Patagonia.

Five examples, 60 to 90 mm. long, three from Montevideo, and two, from Bahía Blanca, types of the species, kindly lent to me for examination by Mr. C. Forster Cooper.

*Chipea melanostoma.*

*Panotolus melanostomus*, Eigenmann, Proc. Washington Acad. viii. 1907, p. 452, pl. xxiii. fig. 6.

Mouth toothless. Depth of body  $3\frac{1}{2}$  to 4 in the length, length of head  $4\frac{1}{2}$  to 5. Diameter of eye 3 to  $3\frac{1}{2}$  in length of head; maxillary extending to below anterior margin or anterior  $\frac{1}{4}$  of eye; 25 gill-rakers on lower part of anterior arch. No grooves at free margin of scales; about 42 scales in a longitudinal and 11 or 12 in a transverse series; ventral scales strongly keeled and acutely pointed, 17-20+9-10. Dorsal 15-16; origin nearer to base of caudal than to end of snout. Anal 17-20. Pelvics 7-rayed, inserted in advance of origin of dorsal. Vertebrae 43.

Rio de la Plata.

Eleven specimens, 65 to 80 mm. in total length.

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XVIII.—*Barnacles from the Hull of the 'Terra Nova':*  
a Note. By L. A. BORRADAILE.

WHEN the 'Terra Nova,' with the British Antarctic Expedition on board, was at Lyttelton, New Zealand, in 1910, barnacles were removed from her bottom. Some of these were included in the collection of Cirripedes taken by the Expedition, upon which I have recently reported (Brit. Antarct. ('Terra Nova') Exped. 1910, Zool. iii. p. 127, 1916). Others came into the possession of the Otago Museum, and are mentioned by Mr. Jennings in an article on the Pedunculate Cirripedia of New Zealand, published in 1915 in the 'Transactions of the New Zealand Institute' (xlvii. p. 285). Unfortunately, at the time of writing my report I had not Mr. Jennings's work before me, and there are consequently between our papers certain discrepancies. The object of the present note is to call attention to and explain these, as follows:—

1. My *Lepas affinis* is Mr. Jennings's *L. anatifera*, var. c. If I had seen Mr. Jennings's description of this form, I should still have thought it advisable to name it as I did, because in my view it is as nearly related to *L. hilli* as to *L. anatifera*, and all three forms are of the same rank,

whether species or varieties. *L. affinis* is undoubtedly a link between *L. anatifera* and *L. hilli*, but in the circumstances I have not proposed to reduce *L. hilli* to the rank of a variety, preferring to leave the discussion of its status till the genus is next revised as a whole.

2. In the material at Mr. Jennings's disposal were specimens of *Conchoderma virgatum* and *C. auritum* from the hull of the 'Terra Nova.' In the collection placed in my hands neither of these species was represented from that source. *C. auritum*, which was taken upon whales in New Zealand waters by the 'Terra Nova,' is also reported by Mr. Jennings from whales in the same neighbourhood.

## PROCEEDINGS OF LEARNED SOCIETIES.

### GEOLOGICAL SOCIETY.

November 8th, 1916.—Dr. Alfred Harker, F.R.S., President,  
in the Chair.

The following communication was read:—

'*Antlia rotiformis*, gen. et sp. nov., *Phillipsastraea hennabi* (Lonsdale), and the Genus *Orionastraea*.' By Stanley Smith, B.A., D.Sc., F.G.S.

The primary object of the present communication is a description of a new and interesting coral genus of colonial habit, *Antlia*, obtained from the highest limestone that can be associated with the Lower Carboniferous—the Fell Top Limestone of Northumberland and its equivalent horizon in Teesdale, the Botany Beds.

Since this form has been confounded with another Carboniferous species, well known under the name of '*Phillipsastraea radiata* (S. Woodward),' it has been found advisable, in fact necessary, to extend the original scope of the paper so as to include a revision of the genus *Phillipsastraea* and a description of '*Ph. radiata*' and its allies, which I have grouped together under a new generic name, *Orionastraea*. Several type-specimens, including that of *Phillipsastraea hennabi* (the genotype of *Phillipsastraea*), are described and figured.

The new genus from the Fell Top Limestone is a very distinctive form, on account of the remarkable annular wall developed within the theca, and may prove of considerable value as a zonal index.

The corallum in this genus, as also in *Phillipsastraea* and in *Orianastraea*, represents a stage in colonial development in which the epitheca of the individual corallites has entirely disappeared, and these are consequently united by their dissepimental tissue—a type of colony to which the term 'Astraciform' may be applied.

#### Diagnoses.

*Aelia rotiformis*.—The corallum is massive, and the corallites are united by their extrathecal tissue: all the septa dilate at the theca, and those of the major cycle again dilate at their axial edges, in such a manner as to fuse together, and so build a cylindrical wall or tube within the theca. The structure of the form is in most respects similar to that of *Phillipsastraea*, but it appears to carry forward the septal characters peculiar to that genus to a further stage of development.

*Phillipsastraea*.—The corallum is composite and massive; the corallites are united by their dissepiments, or are only separated by a thin epitheca; in the former case, the septa are often confluent. Major and minor septa dilate at the theca; the latter terminate there, and the major septa attenuate and advance into the intrathecal region, and there often dilate again at the axial edge. The central part of the corallite is occupied solely by tabulae.

*Orianastraea*.—The characters of this genus are essentially those of *Lithastraea*, but of a modified form. The corallum is composite and massive, and the corallites are either defined by a thin epitheca, or, in the more typical instances, by no epitheca at all; in the latter case the corallites are united by their dissepiments and the septa are confluent.

The distinguishing characters of the three species recognized and described are as follows:—

- |   |                      |                    |
|---|----------------------|--------------------|
| 1. <i>O. ensifer</i> (Edwards & Haime). | Septa not confluent. | Columella present. |
| 2. <i>O. pectinatus</i> (McCoy) .....   | Septa confluent.     | Columella present. |
| 3. <i>O. placida</i> (McCoy) .....      | Septa confluent.     | Columella absent.  |

November 22nd, 1916.—Dr. Alfred Harker, F.R.S., President,  
in the Chair.

The following communication was read:—

'Characeae from the Lower Hadden Beds.' By Clement Reid, F.R.S., F.L.S., F.G.S., and James Groves, F.L.S.

The investigations here recorded have been made at Hordle Cliffs (Hampshire), where the strata, below the superficial gravel, belong

entirely to the Lower Headon Beds, and consist of freshwater and brackish-water (more or less calcareous) deposits, laid down apparently in wide shallow lakes and lagoons. Such habitats are the most favourable to the growth of Characeae, and several of the beds have yielded numerous remains of these plants.

There is a great diversity in the fruits of *Chara* found, representing evidently a number of species, belonging to several different sections or genera. With the exception of a few, which are possibly abnormal variations, the fruits can be roughly grouped under the following eight types:—

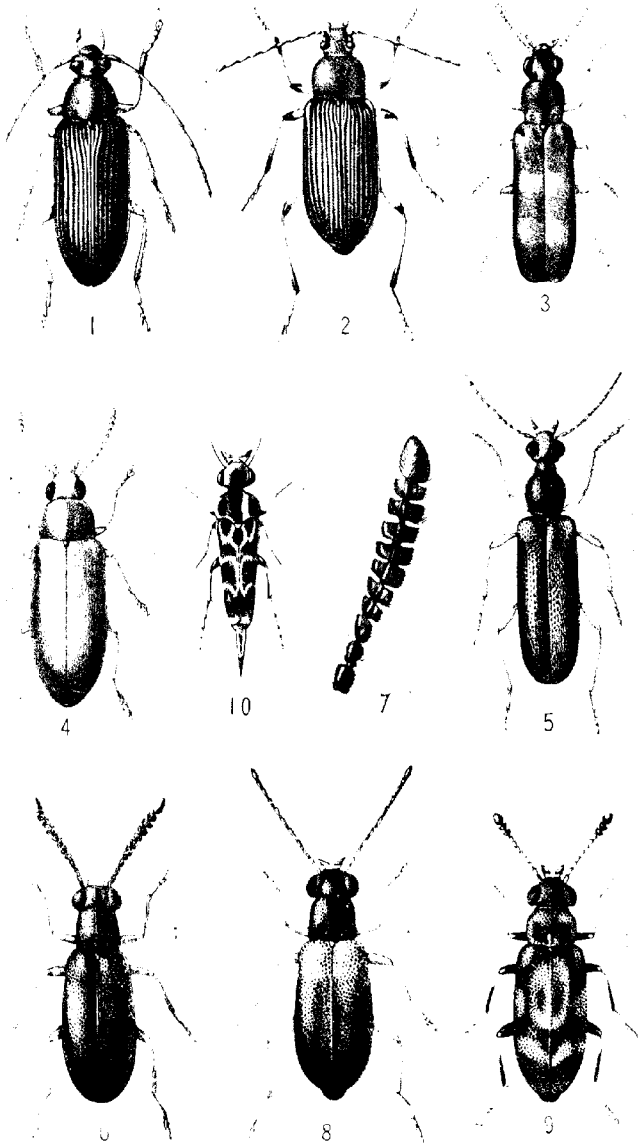
- I. Tuberculate series. (Type of *C. tuberculata* Lyell = *Kozmoggya* Streche, emend.)
  - (a) Spherical.
  - (b) Obovoid or pyriform, with distinctly prolonged base.
- II. Non-tuberculate series.
  - (c) Large spherical, diam. c. 1 mm. (type of *C. medicaginula* Brongn.).
  - (d) Large ellipsoidal (type of *C. helictes* Brongn.).
  - (e) Medium-sized, subglobose, tapering more or less at both ends.
  - (f) Cylindric-ellipsoidal, showing more numerous striae.
  - (g) More or less pyriform: that is, definitely tapering towards the base.
  - (h) Minute, subglobose-ovoid (long. = c. 350 to 500  $\mu$ ).

It is difficult to determine the exact number of species found, on account of the extreme variability of some of the forms, but the Authors consider that at least twelve may, for the present, be conveniently treated as distinct.

The vegetative remains are comparatively few, consisting of minute portions of stems and branchlets of different diameters, and these it is impossible at present to connect with any particular types of fruit.

Though investigations of some earlier formations have shown that there are extinct forms of Characeae exhibiting important points of difference from their living representatives, the remarkably distinct and characteristic oogonium of five elongated apically-twisted cells has remained constant certainly as far back as the Inferior Oolite, and it is only in earlier formations that any doubt arises as to whether bodies are or are not *Chara* fruits.

Characeae are found in still fresh or brackish water all over the world, under widely different conditions as regards heat, etc., and may therefore be expected to occur in almost all freshwater formations. For these reasons it is suggested that the fruits of this group of plants, when more widely collected, may prove of considerable value as zonal fossils for the correlation of lacustrine deposits lying in isolated basins. Doubtless, on account of their small size, the Characeae have in the past often been overlooked.



*Beetles.*

NUMEROUS COLEOPTERA FROM THE SEYCHELLES AND ALDERNEY.



